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How Much Health Service Do Canadians Receive?

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FOR many years those responsible for the planning and administration of health programs in Canada have felt the need for comprehensive and reliable measures of health care applicable to the population across the country. Data assembled by governmental or voluntary prepayment plans, while of great value, are not ordinarily suitable for wider application.

The analyses of the Canadian Sickness Survey which have so far appeared fully justify the original decision to proceed with this national health inventory. The studies based on this survey will add a fund of information to our knowledge of the types and amounts of sickness in the population, the extent to which this burden of illness is met with health care, and the cost of these services to the public and private purse of the nation.

As we approach new and far-reaching developments in health services in Canada, legislators and health administrators will find themselves relying to an increasing extent upon Sickness Survey data for future planning; and perhaps the measurements of the greatest practical value will be those concerned with the amount of illness in relation to the volume of health care actually received.

Public health workers are becoming increasingly involved in the complex problems associated with the planning and administration of health services.

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A firm grasp of the basic measures of morbidity and of the volume and costs of health service will assist in arriving at sound and objective decisions. Here are some of the questions we must ask ourselves:

1. How much medical, hospital, and nursing and other auxiliary care do Canadians receive?
2. What are the factors which influence the type and volume of care they obtain?
3. Are Canadians, in different regions and in various social and economic circumstances, receiving sufficient care and of the right kind?
4. Or indeed, are they receiving too much care—is there overutilization?

Recent tabulations* on the volume of health care derived from the Sickness Survey will help us to answer these questions—at least in part.

Physicians' Services

The physician, serving as the medical counsellor for the family, is the central figure in the provision of health care. As one would anticipate he sees more individuals each year than any other single health worker or health facility. Table I summarizes the volume of physicians' services in terms of persons receiving his services and the volume of calls provided. These data show that the country-wide average rate of office calls was 1,131 per 1,000 and the rate of home calls was 512 per 1,000 during the survey year. Taken together a combined office and home call rate of 1,643 per 1,000 is obtained.

TABLE I

PERSONS REPORTING PHYSICIANS' CARE, AND VOLUME OF PHYSICIANS' CARE BY TYPE OF CALL

Type of call or visit	Persons reporting physicians' care		Calls or visits reported	
	No. (millions)	Per cent of Total population	No. (millions)	Rate per 1,000 population
Office calls	4.42	32.7	15.31	1,131
Home calls	2.48	18.3	6.93	512
Clinic visits	0.63	4.7	1.94	143
Office and/or home calls	5.67	41.9	22.24	1,643
Office, home, and/or clinic visits	5.85	43.2	24.18	1,786

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

What is equally important in this table is the finding that only 41.9% of the total population reported any office or home call. In other words, no less than 60% of the population did not see their doctor during the survey year.

Frequently figures on what may appear to be a high volume of medical care are quoted to substantiate the assertion that persons covered by certain prepayment programs are abusing the service or, alternatively, that physicians are "over-servicing". Under a fairly comprehensive prepayment plan such as

*This paper was prepared on the basis of preliminary tabulations on "volume of health care" which were made available in September, 1955, by the Health and Welfare Division of the Dominion Bureau of Statistics. Subsequently, these data were published in final form in October, 1955, as Part 8 of the DBS Reference Paper No. 51, "Canadian Sickness Survey, 1950–51; Volume of Health Care (National Estimates)."

Windsor Medical Services, for example, only 39% did not see their physician during a 12-month period in 1949–50—in sharp contrast to the 60% non-attendance figure from the Sickness Survey. This is not to suggest that the figure of 39% non-attendance represents a satisfactory level of physicians' care. Actually, Axelrod in his study of the Windsor program (1) suggests that, from the standpoint of prevention, there was under-utilization rather than abuse of service.

The volume of calls, as revealed by the Sickness Survey, would also suggest a relatively low average volume of care for the country as a whole when comparisons are made with areas where comprehensive prepayment plans are functioning. This is borne out from the following composite table:

Annual rates per 1,000	Swift Current Medical Care Program: 1951	Average for three comprehensive voluntary plans: 1951 (2)
Office calls	2,000	1,650
Home calls	340	500
Total	2,340	2,150

Thus the combined rate for office and home calls in the Swift Current program is 42% higher and, in the three comprehensive voluntary plans, 31% higher than the national rate revealed by the Sickness Survey.

Comparisons with the experience in Great Britain are particularly illuminating in view of the contrast in population density, physician supply, health service organization, traditions of medical practice and many other factors. The following published data (3) are sufficiently recent to warrant a general comparison with the data from the Sickness Survey:

Annual rates per 1,000	Before NHS* (under NHI,† 1938–39)	After NHS (1950)
Office attendances	3,910	3,100
Home visits	1,190	1,700
Total	5,100	4,800

*NHS—National Health Service.
†NHI—National Health Insurance (1911).

From these data, at least two significant observations are evident. First, notwithstanding the arguments that could be advanced against the strict comparability of these figures, a very much greater volume of service is being rendered under the National Health Service than under conditions prevailing in Canada. Second, the high volume of physicians' care in Great Britain was not suddenly initiated by the introduction of the National Health Service but had been the pattern for many years under National Health Insurance.

One would anticipate a fairly wide variation in the volume of physicians' services in different parts of Canada. This is borne out in Table II which gives preliminary figures on regional rates of office and home calls. These data show that rates for both types of calls are highest in British Columbia and Ontario and well above the national averages. All of the remaining provinces had combined office and home calls below the national average.

The manner in which the various provinces rank in terms of the rate of office calls and of home calls suggests a number of factors which can influence these differences. Thus a more advanced economic development coupled with a

greater degree of urbanization would help to produce the higher rates in British Columbia, Ontario, and Quebec. The high rates in Ontario and British Columbia are undoubtedly related to their leading position in regard to supply of physicians and the accessibility of physicians to the main concentrations of population. Conversely Newfoundland's extremely low rate is related to the fact that it has the lowest population-physician ratio in Canada along with a retarded economic development.

TABLE II
REGIONAL DIFFERENCES IN RATES OF OFFICE AND HOME CALLS

Rank	Office and home		Office		Home	
	Region	Rate	Region	Rate	Region	Rate
1	B.C.	2,052	B.C.	1,675	Que.	689
2	Ont.	1,990	Ont.	1,399	Ont.	591
3	Que.	1,524	Prairie	1,089	Mar.	445
4	Mar.	1,418	Mar.	973	B.C.	377
5	Prairie	1,298	Que.	841	Nfld.	274
6	Nfld.	687	Nfld.	413	Prairie	209
	Canada	1,646	Canada	1,134	Canada	512

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

One can also safely assume that such physical influences as climate, topography and roads will have an impact on the volume of care which is received. These factors help to produce the lowest rate of home calls in the prairie region.

In many areas the volume of home calls has been declining in recent years and patients who are moderately or more seriously ill are more likely to be admitted to hospital. The emergence of comprehensive province-wide hospital care programs has accelerated this changing pattern and this, in part, also helps to explain the lowest home call rates in British Columbia, Newfoundland and the prairies.

Numerous studies in many countries have demonstrated the positive correlation between utilization of medical care and the socio-economic status of families. The preliminary data presented in Table III tend to bear this out

TABLE III.
PHYSICIANS' CARE BY INCOME GROUP

Income group	Rate of calls per 1,000 population		
	Office calls	Home calls	Clinic visits
All incomes	1,131	512	143
Less than $1,500	1,060	420	140
$1,500–$2,999	1,110	380	150
$3,000–$4,999	1,190	490	150
$5,000–	1,230	660	170

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

although not to the degree one might anticipate. Office call rates increase slightly but progressively with rising income. Except for the group with incomes less than $1,500 per annum, home call rates rise with advancing income. The same holds true for clinic visits although one might have expected a reverse relationship since these were defined as visits to out-patient hospital clinics and did not include visits to medical group-practice clinics. Further analyses should clarify this point.

Any study of the volume of medical care in Canada should attempt to answer the question: are Canadians obtaining sufficient care (and of the right kind) to meet their needs? There are numerous facets to this question and the data from the analyses of the Sickness Survey so far are only suggestive in terms of national estimates. In Table IV various data from separate tabulations of the report* are grouped so that some measure of met and unmet need can be appreciated.

TABLE IV
VOLUME OF SICKNESS RECEIVING PHYSICIANS' CARE

Item	No. (millions)	Per cent of total population
Persons reporting complaint periods	11.04	80.4
Persons reporting disability periods	8.03	58.5
Persons reporting physicians' care	5.85	43.2
		Per person of population
Complaint periods reported	29.80	2.2
Disability periods reported	15.18	1.1
Calls and/or visits reported	24.18	1.8
Complaint periods with physicians' care	7.45	25.9% of all c.p. 49.1% of all d.p.
		Calls per complaint period under specified care
Calls or visits for complaint periods:		
Number office calls	11.68	2.4
Number home calls	6.76	2.2
Number clinic visits	1.53	3.2

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

This table shows that 80.4% of the total population reported complaint periods† and 58.5% reported disability periods.** At the same time 43.2% of the population reported receiving some form of physicians' care. In the total population 29.8 million complaint periods were reported and 15.18 disability

*See footnote on page 366.

†Complaint period defined as any period of time when a person experienced any disturbance in his state of health and was at no time free of symptoms. This includes very minor ailments, moderate illness resulting in disability, as well as serious illness necessitating bed care.

**Disability period was defined as any period of time when a person because of illness was continuously away from his usual activity or occupation (1 day or more); the sum of disability periods is included in the sum of complaint periods.

periods. Moreover, 7.45 complaint periods were reported as having been attended by a physician (at office, home or clinic). If this latter (7.45 complaint periods with physicians' care) is related to all complaint periods it follows that only 25.9% of the total number of complaint periods were attended by physicians.

Since many of the complaint periods probably included a large number of minor and self-limiting disorders (such as headache, coryza or ill-defined symptoms) it is more reasonable to relate complaint periods with care to disability periods. These latter episodes of illness at least involve one day or more away from work or usual activities. When this calculation is made, we find that only 49.1% of all disability periods were associated with the receipt of medical care.

Should subsequent detailed analyses of the Sickness Survey data reveal that a portion of disabling periods of illness were also of a minor nature, the fact remains that a significant proportion of illness among Canadians remains unseen, undiagnosed and unattended by a physician.

Table IV also presents a somewhat different measure of medical care related to reported illness. In this instance physicians' calls of the various types are related to complaint periods where the corresponding type of call is made. Thus 2.4 office calls, 2.2 home calls and 3.2 clinic visits were provided per complaint period receiving each specified type of call or visit.

One index of the adequacy of medical care is the extent to which various sections of the population are able to obtain periodic medical examinations. Specialized or general medical investigations of persons who are subjectively free from any complaint are effective instruments for prevention.

An attempt to analyze this question is made in computations shown in Table V. Physicians' calls of all types where no complaints were reported comprise 17.4% of total calls. Of all office calls 23.7% were unassociated with any complaint; of home calls only 2.5%; and of clinic visits 21.1% were made for reasons other than a specific complaint or illness. Further detailed analyses would reveal the relative extent to which such services as pre-natal care, immunization, routine chest x-ray, pre-marital examinations and the like accounted for these calls.

TABLE V

RELATION OF TOTAL PHYSICIANS' CALLS AND CLINIC VISITS TO CALLS AND VISITS FOR COMPLAINT PERIODS

Type of call or visit	Total number for population (millions)	Total number for complaint periods (millions)	Difference (*a*) – (*b*) (millions)	(*c*) as % of (*a*)
	(*a*)	(*b*)	(*c*)	(*d*)
Total	24.18	19.97	4.21	17.4
Office calls	15.31	11.68	3.63	23.7
Home calls	6.93	6.76	0.17	2.5
Clinic visits	1.94	1.53	0.41	21.1

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

In Table VI the rate of all types of calls and visits is presented for specific age-sex groups. The major observations are a steadily rising volume of care in successively older age groups; a higher rate for females than males for all ages combined and the high rate for females aged 25–44 (largely for maternity services). This age-sex pattern has been noted in studies of various prepayment plans.

TABLE VI
RATE OF PHYSICIANS' CALLS AND CLINIC VISITS PER 1,000 POPULATION BY AGE AND SEX

Age group	All calls and visits	Office calls	Home calls	Clinic visits
	Both sexes			
All ages	1,786	1,131	512	143
Under 15	1,210	695	418	97
15–24	1,353	955	302	97
25–44	2,044	1,448	434	161
45–64	2,296	1,444	650	202
65+	2,751	1,281	1,258	212
	Male			
All ages	1,452	901	400	152
Under 15	1,261	723	415	124
15–24	895	625	178	—
25–44	1,298	935	214	149
45–64	2,065	1,273	531	261
65+	2,386	1,130	1,125	—
	Female			
All ages	2,124	1,364	626	135
Under 15	1,158	667	421	70
15–24	1,795	1,273	421	—
25–44	2,775	1,950	651	174
45–64	2,542	1,626	778	139
65+	3,125	1,435	1,394	—

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

One might have anticipated a much higher utilization among those aged 65 years and over than the data reveal. For these older persons in the population, among whom sickness is so much more frequent, the office call rate is only 13% above the average for all ages. In contrast, under a comprehensive prepayment plan such as the Swift Current program where the financial barrier is removed, the comparable rate is 74% above the average for all ages.

In Table VII the data on age differentials for physicians' care are presented in a somewhat different way. In this instance complaint periods under physicians' care as a proportion of total complaint periods for each age group have been computed. Thus for all ages combined approximately 25% of com-

plaint periods were attended by a physician in home, office, or clinic. The proportion of complaint periods under care do rise with advancing age but only to a moderate degree. Even among those 65 and over, at least 60% of these complaints go unattended. Many are undoubtedly of a minor nature but presumably a significant portion are of a more serious nature.

TABLE VII

VOLUME OF SICKNESS UNDER PHYSICIANS' CARE BY AGE (COMPLAINT PERIODS WITH CALLS OR VISITS AS PER CENT OF ALL COMPLAINT PERIODS IN EACH AGE GROUP)

Age group	Any calls and/or visits	Absence of calls or visits
	Both sexes	
All ages	25.3	74.7
Under 15	19.8	80.2
15–24	24.3	75.7
25–44	27.2	72.8
45–64	32.1	67.9
65+	37.6	62.4

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

It has been a frequent observation in the experience of community and industrial medical programs that a relatively small portion of the covered population account for a large proportion of the total care which is provided in a given year. To some extent this is borne out in Table VIII which shows a distribution of persons reporting calls or visits by the frequency of these calls or visits. Thus 34.9% report only one call or visit during the year; 53.5% report one or two calls or visits; and 74% report up to and including four medical attendances annually. Less than one-tenth of the population—those with 10 or more calls or visits—can be said to have received a more than usual amount of medical care.

TABLE VIII

FREQUENCY OF PHYSICIANS' CALLS AND CLINIC VISITS

Specified number of calls and visits	Number of persons with calls or visits (millions)	Per cent of total population with calls or visits	Per cent of total population (cumulative)
Total	5.85	100.0	
1	2.04	34.9	34.9
2	1.09	18.6	53.5
3	0.72	12.3	65.8
4	0.48	8.2	74.0
5–9	1.00	17.1	91.1
10+	0.52	8.9	100.0

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

In-patient Hospital Care

Hospital care forms a large and important element of the total health services which Canadians receive. From the data of the survey we find that just over 10% of the population were hospitalized during the survey year. The total expenditure for the care they obtained, including prepayment premiums and direct expenditures, came to $90,000,000. This amount comprised 24% of the total expenditure for all health care (4).

In Table IX certain indices of the volume of in-patient hospital care are shown. The term "hospital period" as used in the survey report is equivalent to the terms "admission" or "discharge" in general usage.

TABLE IX

VOLUME OF IN-PATIENT HOSPITAL CARE (HOSPITAL PERIODS OR "ADMISSIONS")

	All hospital periods ("admissions")				Average days of stay
	Hospital periods		Days		
	Number (millions)	Rate per 1,000 population	Number (millions)	Rate per 1,000 population	
All ages	1.65	122	23.39	1,728	14
All ages (newborns excluded)	1.39	103	21.32	1,575	15

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950-51.

The admission rate for all ages is shown to have been 122 per 1,000 with a rate of days of 1,728 per 1,000 and an average length of stay of 14 days. If newborns are excluded from these figures, the rate for admissions was 103 per 1,000, the rate of days—1,575 per 1,000, with a length of stay of 15 days. It should be noted that these rates are national averages and important regional differences remain hidden. Future studies will, of course, identify these variations.

In any event there is some value in comparing these national data with the experience of a well-established province-wide hospital care program. In Table X rates of care provided under the Saskatchewan Hospital Services Plan in 1951 are set forth in a form comparable to the data in Table IX. By comparing the rates for all ages with newborns excluded, it is seen that under SHSP the case rate is 93% higher, the rate of days is 40% higher, and the length of stay is 26% lower than similar rates revealed by the Sickness Survey.

While comprehensive prepaid hospital care on a province-wide basis is not the only factor which can serve to explain these differences, such programs undoubtedly have had an important impact. In a recent year (1953) the three provinces with hospital care insurance covering all or an extensive portion of the population—British Columbia, Alberta and Saskatchewan—had rates of days exceeding the national average. At the same time the rates of days in Ontario and Quebec were below the national average.

Recently it has been possible in a preliminary way to examine some of the

factors which influence variations in hospital utilization. A study (5) of SHSP data for 1952 demonstrated the important effect of relative bed capacities on the use of hospital services. It is reasonable to suggest that the bed-population ratios in Saskatchewan, Alberta and British Columbia,* which

TABLE X
VOLUME OF IN-PATIENT HOSPITAL CARE UNDER SASKATCHEWAN HOSPITAL SERVICE PLAN, 1951

	Discharged cases				Average days of stay
	Cases		Days		
	Number (000's)	Rate per 1,000 population	Number (000's)	Rate per 1,000 population	
All ages	174.6	224	1,884.3	2,417	11.1
All ages (newborns excluded)	154.8	199	1,715.2	2,201	11.1

SOURCE: SHSP Annual Report, 1951.

were the highest in Canada helped to produce the high utilization rates. This study of the Saskatchewan experience also demonstrated the effect of other health and socio-economic influences. The degree of rurality, farm values which reflect economic levels, access to hospitals, availability of physicians, variations in patterns of illness, and others have a profound influence upon the rate of hospital care which is reached in any region.

The impact of long-stay cases, particularly the chronically ill, upon the financial and organizational structure of hospitals is becoming more pronounced. The analyses of the Sickness Survey data so far only give a general indication of the extent to this problem. Thus in Table XI which shows a distribution of hospitalized persons by length of stay, we note that 12.1% of all in-patients stayed in hospital for 28 days or longer. It should be recognized that only a part of this group of patients includes chronically ill patients, the remainder being made up of acutely ill persons with extended stay and those who are convalescing.

TABLE XI
HOSPITALIZATION OF PERSONS BY LENGTH OF STAY (NEWBORNS EXCLUDED)

Length of stay in days	Number of persons (millions)	Per cent	Cumulative per cent
Total	1.16	100.0	
1–6	0.49	42.2	42.6
7–13	0.37	31.9	74.1
14–20	0.12	10.3	84.4
21–27	0.04	3.5	87.9
28+	0.14	12.1	100.0

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

*Rated beds per 1,000 in 1951—6.7, 5.9, and 5.7 respectively.

Comparative data for SHSP are set forth in Table XII. In this instance only 5.3% of all cases were in hospital for periods exceeding 30 days. However, this group of patients accounted for just over one-third of the total patient days in 1951. Further, a census of these long-stay cases taken near the year-end showed that 67% fell in the category "chronically ill" while 33% were classified as "acutely ill or convalescent" (6). The Saskatchewan data reflect a lower level of chronic beds in this province. In other provinces with special chronic disease institutions proportions of long-stay cases would be higher helping to raise the national average.

TABLE XII

HOSPITALIZATION OF CASES BY LENGTH OF STAY UNDER SASKATCHEWAN HOSPITAL SERVICES PLAN, 1951 (NEWBORNS EXCLUDED)

Length of stay in days	Number discharged cases (000's)	Per cent	Cumulative per cent
Total	154.8	100.0	
1–10	112.4	72.6	72.6
11–20	26.7	17.2	89.8
21–30	7.5	4.9	94.7
31+	8.3	5.3	100.0

SOURCE: SHSP Annual Report, 1951.

Other Health Care

The volume of certain health services, other than medical and hospital care, received by Canadians during the survey year is indicated in Table XIII. These data support the empirical impressions that health workers have had for many years. First, the volume of home nursing care at a rate of 11 per 1,000 with a rate of days or visits of 131 per 1,000 is extremely low and represents, at best, a token service. That most of these visits (73%) were provided by graduate nurses indicates how far we must go in mobilizing auxiliary nursing services for home care.

Second, an appallingly low proportion of the population—14.5%—reported visits to a dentist during the survey year and the number of visits per person reporting came to only 2.2. The higher rate for females is probably due to a greater appreciation of the value of dental care as well as for aesthetic reasons.

Dental care is perhaps the one health service most directly influenced by variations in family income. In an earlier bulletin (7) on the survey it was found that expenditures on dental care dropped sharply with declining income. In a recent national survey of health expenditures in the United States (8), it was discovered that only 34% of persons had consulted a dentist in a year and this proportion varied widely with family income levels.

Finally, 3.2% of the population reported receiving examination for glasses by optometrists and 1.0% reported visits to other sectarian practitioners, such as osteopaths and chiropractors. The average number of treatments per person reporting this latter type of care (6.1) is considerably higher than the reported figures for medical, dental or home nursing care.

TABLE XIII

OTHER TYPES OF HEALTH SERVICES

Home Nursing Care:

Number of persons reporting care (millions)	0.15
Rate per 1,000 population	11
Graduate nursing care	73%
Non-graduate nursing care	27%
Number of days or visits (millions)	1.78
Rate per 1,000 population	131
Number of days or visits per person reporting care	1.9
Graduate nursing days or visits	40%
Non-graduate nursing days or visits	60%

Dental Care:

	Persons reporting visits		Visits	
	Number (millions)	% of population	Number (millions)	Rate per 1,000
Both sexes	1.97	14.5	4.32	319
Male	0.87	12.8	1.77	260
Female	1.09	16.3	2.54	378

Number of visits per person reporting care 2.2

Examination for Glasses:

	Persons reporting exam.		Examinations	
	Number (millions)	% of population	Number (millions)	Rate per 1,000
Both sexes	0.44	3.2	0.51	38
Male	0.18	2.6	0.21	30
Female	0.26	3.9	0.31	46

Other care (physiotherapists, osteopaths, chiropractors, chiropodists, etc.):

	Persons reporting treatments		Treatments	
	Number (millions)	% of population	Number (millions)	Rate per 1,000
Both sexes	0.14	1.0	0.83	62
Male	0.07	1.0	0.42	61
Female	0.07	1.0	0.42	62

Number of treatments per person reporting 6.1

SOURCE: Preliminary tabulations from Canadian Sickness Survey, 1950–51.

SUMMARY

The initial analyses on volume of health care derived from the Canadian Sickness Survey reveal, for the first time, objective data on the health services which Canadians receive. During the survey year, only about 40% of the population reported obtaining physicians' care. Moreover, just under 50% of those who had disabling illnesses (off work 1 day or more) were reported as being under the care of a physician.

The volume of physicians' calls and clinic visits came to about 1,800 per year and showed significant regional differences as well as variations by income

group. The national average rate of calls is lower than what is experienced under conditions of comprehensive prepayment plans in Canada. Physicians' calls during the survey year by persons without sickness formed 17% of total calls and this can be taken to represent an important element of preventive medical care.

The nation-wide average volume of in-patient hospital care (newborns excluded) came to 103 admissions and 1,575 days per 1,000 during the survey year. This level is considerably lower than the rates experienced under comprehensive province-wide hospital insurance. Provinces with these programs along with above-average bed-population ratios had utilization rates far in excess of those without such programs and with fewer beds to serve the people.

National levels of home nursing care and dental care are low and undoubtedly far below the need for these services. Only small proportions of the population visit optometrists for glasses or attend sectarian practitioners for treatment purposes.

REFERENCES

1. Axelrod, S. J., and Patton, E. R.: Am. J. Pub. Health, 1952, *42*: 566.
2. Voluntary Medical Care Insurance. Ottawa, Canada: Division of Research, Dept. of National Health and Welfare, 1954 (General Series No. 4). Table 27, p. 152.
3. Taylor, S.: Good General Practice (Oxford University Press, London: 1954), p. 62.
4. Canadian Sickness Survey, 1950–51: Family Expenditures for Health Services, Spec. Compilation No. 1 (D.B.S. and Dept. of National Health and Welfare, Ottawa: 1953) Table 1, p. 5.
5. Roth, F. B., Acker, M. S., Roemer, M. I., and Myers, G. W.: Canad. J. Pub. Health, 1955, *46*: 303.
6. Unpublished data: Saskatchewan Hospital Services Plan.
7. Canadian Sickness Survey, 1950–51: Family Expenditures for Health Services by Income Groups, Spec. Compilation No. 2 (D.B.S. and Dept. of National Health and Welfare, Ottawa: 1953) Table 7, p. 11.
8. Anderson, O. W.: National Family Survey of Medical Costs (Health Information Foundation, New York: 1954) Table 7, p. 62.

Symposium on the Canadian Sickness Survey
Summary and Implications

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IT has been said that a discussant is one who believes he should have been asked to give the principal papers, and who therefore proceeds to do so after they have already been presented. It is difficult to offer summaries of papers such as these, since for so broad a topic each of these papers is in reality a summary. These comments can only raise questions and perhaps underline a few points that seem at this time to be important.

First with respect to the Canadian Sickness Survey in general, there is no doubt that this has been a major undertaking of great value to our understanding of health problems and planning for their solution. Probably too little has yet been heard of the findings by those who should be most familiar with them.

Congratulations are certainly due to the Dominion Bureau of Statistics, the Department of National Health and Welfare, and the co-operating Provincial Health Departments. A civil servant is ideally supposed to have a "passion for anonymity", but one may perhaps wonder why we have heard so little of the individuals who have planned the Survey and are processing the data. Morbidity studies in England have long been associated with the name of Percy Stocks, those in the United States with Selwyn Collins. Without presuming that we have any such giants in action in this country, perhaps some recognition would help to develop in Canada individuals of this stature.

Broadening Public Health Responsibilities

The fact that the Survey was undertaken by all the larger governments in Canada seems to carry a very important implication as to the role of government in relation to people's health and medical care. The era of laissez-faire in matters of health and medical care came to an end long ago, beginning perhaps in England with the licensing of physicians under Henry VIII and having its great acceleration since the early Public Health movement under Edwin Chadwick about a century ago. Except for specific preventive measures and special diseases, such as mental illness and tuberculosis, however, the heritage of Henry VIII and Thomas Linacre has perhaps been comparable to government acting as a regulatory agency for a medical and health business, similar to other government regulatory commissions. One wonders if the remarkable unanimity between all provincial and federal governments in carrying out this

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study does not suggest that governments are preparing to take a more positive role in planning and providing health services for the general population.

However this may be, certainly this Survey heralds the opening of a new era for public health in Canada. Statistical analyses of causes of mortality, provision for long-term care of tuberculous and mental patients, and specific preventive measures comprised most public health services in the past. Examination of the causes of morbidity as a whole, and of the economic and administrative organization of medical and health services in the country as a whole, through the Canadian Sickness Survey and accompanying Dominion Provincial Health Surveys, mark the recognition by Canadian governments that public health is necessarily concerned with all aspects of the health of the public. It is to be hoped that public health workers, and the universities that educate them, can move with the times to discharge their new obligations. Dr. Kohn's statistics help document both the achievements of public health workers in the past, with great reductions in communicable diseases, and to outline the volume and nature of the illnesses that now constitute our major public health problems. Public policy is demanding that we public health workers shift our emphasis from the problems of a generation ago to the major problems of the health of the public today.

In this shift of government emphasis it is encouraging to see that reliance is placed on scientific study of the problems and the use of epidemiological and statistical methods, rather than seeking some miraculous cure—all based largely on political expediency. Let us not forget, however, that as needs become apparent from scientific study of this sort governments will be under the gravest of obligations to make the necessary changes to meet them.

Public Policy in Medical Care Expenditures—Equity and Costs

Now for a few observations on a point raised by consideration of all of these excellent papers together. One of the striking features is the great disparity in expenditures by families of different income groups for medical and health services. One is given to ask, does this mean that those with higher incomes are actually receiving more medical services than those in the lower income groups, or that they are merely paying more for the same amount of service. If, as seems apparent, they are doing both, is the increased service received by the upper income group justified by there being less health and more in need of medical care. The best available evidence is that the opposite is true. Dr. Kohn can doubtless document this point from many sources.

One is reminded of studies of consumer expenditures in the United States over a number of decades, about which the American Medical Association commented that they seemed to vary more as luxury items, that is, similar to jewelry expenditures, than as necessities such as food and shelter (1). How do we draw the line between essential expenditures towards which governments might well be asked to contribute so that all may attain at least a minimum level of service, and medical and health expenditures that approach the luxury level? This question is no longer academic when we consider that government and private philanthropy are already paying between one-third and one-half of all health costs.

Regardless of whether it is voluntary and commercial, or government, hospital and medical care insurance plans that meet most of the health costs of Canadian families in the future, the same question of public policy must be answered. Are these services so organized and administered that the unmet needs Dr. Francis points out as revealed by the Survey statistics continue for some groups in the population, while the volume of services and costs for other groups—already reasonably well served—continue to rise?

It may be that this disparity between unmet need for some groups and excessive volume of service for others, is largely because Health Insurance does not yet cover all groups in the population. Or it may be because so much of the total Health Bill (50%) is not covered by insurance but still falls on the family directly. However, Dr. Acker's exceptionally fine discussion suggests to me that even comprehensive medical and hospital care insurance will not solve this problem. True, comprehensive coverage and benefits remove the economic deterrents from those with unmet needs. But with demand for services then rising rapidly to the volumes in Saskatchewan, Windsor, or Britain, other factors operate to leave some areas of need unmet or even to create new ones. Piece-meal voluntary, commercial and government coverage may even accentuate these iniquities, by concentrating the relatively limited health personnel and services on covered groups and services that are selected, not necessarily according to relative need, but according to quite unrelated factors such as politics, ability to secure payroll deduction for premium collection, or ability to negotiate a pre-payment contract with the vendors of service.

Further analyses of volume of services and incidence of illness by income, age and rural-urban location in later publications of the Sickness Survey may help clarify the problem and suggest possible solutions. But some further research will be needed. In particular we should look for analyses of pre-payment programs now providing fairly comprehensive services.

Can we identify medical services that are preventive, rehabilitative or essential for humanitarian reasons even where the prognosis is hopeless? Can these services be given a priority over the less essential ones, so that they will be equally available to all groups in the population without a concurrent excessive increase in all medical services and costs? If this could be done, surely these are the essential services toward which governments should first make a contribution. These are the services which should be available on the basis of medical need to all groups in the population equally.

Now for a few comments on points in individual papers.

Family Expenditures Data

As yet the total costs per family for all medical and health expenditures seem rather low, particularly in contrast to a similar study in the United States about the same time. We could spend much more than 4 per cent of national income on personal health services without fear of economic dislocation.

The importance of good costs in proportion to all family expenditures for health care was a little unexpected, whereas hospital costs are seen to be rather less than might popularly be supposed. When one remembers that a part of

hospital and physicians' services include drugs it is apparent that the Survey data may even underestimate drug costs.

A final comment on Dr. Francis' paper should emphasize one of his principal points, documented also by special studies of the Research Division of the Department of National Health and Welfare. The study by the Health Information Foundation of New York, as was reported to this Conference in part last year by Odin Anderson (2), shows a similar picture for the United States.

Hospital care insurance is still the only portion of family expenditures for health care that is largely pre-paid, and even here the balance is not much better than 50 per cent. Medical care insurance also is still largely limited to the middle and upper income groups and the urban areas. More money is still expended in direct payment by families than in pre-payment.

Volume of Sickness

Dr. Kohn's paper on the volume of sickness is so well done that one hesitates to offer much comment, and it certainly defies summary. Perhaps it is pertinent to ask a question such as this. To what extent does house-to-house canvassing reveal actual morbidity, in contrast to morbidity data obtained by multiple screening or by complete medical diagnostic examination of a random sample of the population?

For example, in this Survey adult females reported more minor illness than males in terms of non-disabling days of illness, and I would presume that adult females also were by far the most frequent reporters to the surveyors of the family illnesses. Perhaps this is an illustration of the kind of bias that might be considered inevitable.

Other sources suggest close correlations between actual illness as disclosed by a family doctor, and as reported by household survey.

In most provinces some validation of this kind was available. When the Commission on Chronic Illness in the United States has completed comparisons of findings from a complete medical diagnostic work-up, multiple screening, family doctor questionnaires, and family reporting, however, it may be apparent that "episodic" medicine is not really giving an accurate picture of the prevalence of many illnesses (3). This is not to deny that most illness may quite probably be treated symptomatically. We may have neither the medical manpower nor often the necessity to undertake more accurate diagnoses. However, let us not jump to conclusions one way or another until much more is known. It may well be that in certain of the chronic illnesses in their early stages it is highly important to have more accurate information than is available from household surveys.

Dr. Kohn brought out two other points that should be emphasized. He indicated that for morbidity, unlike some of the family health expenditure data, more detailed tabulations will be available on incidence and prevalence according to social characteristics. He did not indicate to what extent this would not be available from such a study. It seems to me that this is probably only a base line on which to develop more intensive studies of special aspects of morbidity. Has not the time arrived when we should have a careful analysis

of what we are not going to get out of as extensive a study as the Canadian Sickness Survey, and some of the details that are needed for development of sound public health policies that can only be obtained from additional studies? Attention should also be given to a philosophical point of great importance in Dr. Kohn's paper. This leads us back to our earlier comment, closely related to Dr. Acker's presentation.

The chapter in Hanlon's textbook of Public Health Administration (4) based on the money value of man by Dublin and Lotka has always given me an uncomfortable feeling that public health was measuring human life and health in dollars and cents. Obviously the objective of medical and health services is good health regardless of whether it costs us more than for some groups in the population to suffer ill health or premature death. It is true that up to a certain point—where prevention is possible and for certain age groups particularly—good health is economically profitable. Beyond that, however, we must be prepared to pay substantial additional costs, which can only be met through pre-payment plus government participation if we really have good health as our objective.

Experience with pre-paid plans, the experience of comprehensive medical care programs abroad, and the presentation by Dr. Acker, all suggest that we must plan in the future for a higher rate of utilization of most medical and health services, for higher costs and for the provision of more medical manpower and hospital beds, if we are to deal adequately with the needs revealed by a study such as this. But since we cannot afford everything, and since beyond a certain point the demand for medical and hospital services becomes a demand for luxury service in which it is probably not the function of philanthropy or government to participate, the great question of public policy before us today is this. To which services, to which diseases, to which groups in the population should we give priority in the planning and provision of health services that are to be assisted by public funds? Here again it is only by additional studies that we can develop data to help us answer these questions on the basis of scientific knowledge and not of political expediency.

REFERENCES

1. United States Department of Commerce, Surveys of Current Business, Consumer Expenditures for Medical Care.
2. Anderson, O. W.: Canad. J. Pub. Health, 1954, *45*: 36.
3. Trussell, R. E. Elinson, J., and Levin, M. L.: Am. J. Pub. Health, 1956, *46*: 173.
4. Hanlon, J. J.: Principles of Public Health Administration. 1955, 2nd ed. Mosby, St. Louis.

Clinical Evaluation of a New Triple Penicillin Salt* in the Treatment of Acute Gonorrhoea

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ALTHOUGH there now exist excellent methods of treating the major types of venereal disease, any new product which promises better treatment should not be ignored by a progressive venereal disease clinic. Thus, shortly after the introduction of procaine penicillin G in oil with 2% aluminum monostearate (PAM), this product became extensively used in venereal disease clinics in British Columbia because of its ability to maintain therapeutic blood levels following a single injection, for longer periods than had hitherto been possible. With the introduction of benzathine penicillin and its combinations, it was decided to initiate a clinical evaluation of one of these new derivatives,* as compared with PAM† for the treatment of acute gonorrhoea.

Benzathine penicillin, the chief constituent of BAP was first described in 1951 (1, 2). Therapeutically significant blood levels lasting up to fourteen days after intramuscular benzathine penicillin were described following 600,000 and 1.2 mega unit doses. The combination BAP was subsequently marketed to provide high initial and intermediate blood levels for the immediate control of acute infections, and at the same time to maintain long-continuing blood levels for prophylactic purposes. This product appeared to show promise for the treatment of acute gonorrhoea and forms the subject of the present paper.

Benzathine penicillin alone has been used in the treatment of acute gonorrhoeal urethritis in the male by O'Brien and Smith (3). These authors reached the conclusion that "Although no proved failure in any given case of acute gonorrhoeal urethritis was observed, it seems conservative to state that minimal 'cure' rates in patients receiving 300,000 units is 95%, and in patients receiving either 500,000 or 2.5 mega units is approximately 98%." Lepper et al. (4), have treated acute gonorrhoea with a single dose of 600,000 units of benzathine penicillin, and report that smears revert to negative in an average time of three hours. It is concluded by the above authors that benzathine penicillin by injection constitutes adequate therapy for gonorrhoea. However, according to one authority oral benzathine penicillin in large and repeated doses did not provide adequate therapy as the cure rate was only 85.7% (5).

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*Bicillin All-Purpose (Wyeth) which, when reconstituted with 1 cc water for injection, supplies 600,000 I.U. Bicillin (benzathine penicillin G), 300,000 I.U. Procaine penicillin G, and 300,000 I.U. potassium penicillin G. This product is hereafter referred to as BAP.

†Commercially prepared procaine penicillin G in oil with two percent aluminum monostearate—Lentopen 300 (Wyeth).

Quite apart from treatment success, in the evaluation of any new product it is important to determine both the incidence and severity of reactions in the patients treated. Local reaction to benzathine penicillin, at the site of injection is described many times in the literature. It is suggested (6) that this reaction may be prolonged due to the storage of compound at the injection site. Generalized reactions consisting of dermatitis medicamentosa with generalized erythema, angioneurotic oedema, urticaria and pruritis are reported in 0.3% patients receiving benzathine penicillin (3). Cases of anaphylactic reaction to benzathine penicillin, with angioneurotic oedema, weak pulse and blood pressure, and nausea and vomiting have been described (7). Joint symptoms and dyspnoea have also been reported. It is recommended (7) that history of allergic sensitivity be sought for, and that scratch tests be done if necessary.

Evaluation Study

During the period of the evaluation study (August 1st, 1954 to June 30th, 1955) all patients under investigation for gonorrhoea and eligible for treatment under the Vancouver Clinic criteria, received either one of the two types of penicillin under study (PAM or BAP) as determined by statistical methods for random sampling. The dosage with both types of penicillin was 1.2 mega units—this dosage being selected on the basis of previous studies (8) which suggested that this was adequate to both cure gonorrhoea and abort concomitantly-acquired syphilis. Following treatment, patients were encouraged to report for at least one test-of-cure. All apparent treatment failures on test-of-cure were carefully re-questioned and re-evaluated by two experienced clinicians in an attempt to exclude cases of re-infection.

Results

In the tables which follow are summarized the more important results of the evaluation study.

From Table I, it can be seen that a total of 972 patients, investigated for

TABLE I

Percentage Distribution of All Patients Investigated for Gonorrhoea and Treated with Penicillin, by Diagnosis and Sex, Vancouver Clinic, August 1, 1954—June 30, 1955

Diagnosis	Male		Female		Total	
	No.	%	No.	%	No.	%
G.A.B.*	403	56.3	67	26.4	470	48.3
G.A.E.†	—	—	187	73.6	187	19.3
N.S.U.‡	315	43.7	—	—	315	32.4
Total	718	100.0	254	100.0	972	100.0

*Gonorrhoea, acute bacteriological (positive smear and/or culture).
†Gonorrhoea, acute epidemiological (patient named as a contact or known to be promiscuous).
‡Non-specific urethritis.

gonorrhoea, were considered eligible for penicillin treatment under the Vancouver Clinic criteria. Of these 972 patients, 718 (or 73.9%) were males and 254 (or 26.1%) were females. In terms of subsequent diagnosis, only 470 (48.3%) of the total patients treated were proven bacteriologically to have had gonorrhoea although there were important differences as between the two sexes.

Over half of all male patients treated were confirmed as gonorrhoea cases, as compared with little more than one-quarter of the females.

In Table II, are set out the results of treatment with the two different types of penicillin (PAM and BAP), in the 470 patients confirmed as having had gonorrhoea.

TABLE II

PERCENTAGE DISTRIBUTION OF PATIENTS CONFIRMED AS HAVING GONORRHOEA (G.A.B. DIAGNOSIS) BY TYPE OF PENICILLIN ADMINISTERED, TREATMENT RESULT AND SEX, VANCOUVER CLINIC, AUGUST 1, 1954–JUNE 30, 1955

Treatment result	PAM		BAP		Total	
	No.	Cure* Rate (%)	No.	Cure* Rate (%)	No.	Cure* Rate (%)
Males:						
Cure	114	96.6	111	98.2	225	97.4
Failure	4	3.4	2	1.8	6	2.6
Unknown†	96	—	76	—	172	—
TOTAL	214	100.0	189	100.0	403	100.0
Females:						
Cure	27	100.0	18	90.0	45	95.7
Failure	—	—	2	10.0	2	4.3
Unknown†	8	—	12	—	20	—
TOTAL	35	100.0	32	100.0	67	100.0

*Based upon patients who reported back for at least one test-of-cure.
†Patients who did not report for test-of cure.

A statistical analysis revealed no significant difference at the 5% level between the known treatment results for either sex with either drug from which it may be assumed that PAM and BAP are equally effective in the treatment of acute gonorrhoea.

In Table III, below, are summarized the available data upon the incidence and types of reaction encountered in all patients investigated for gonorrhoea and treated with either of the two types of penicillin under study. These reactions were classified as local or general, immediate or delayed, in type. It should be pointed out, however, that in attempting to ascertain the incidence of delayed reactions, a decided limitation was imposed by the fact that only 278 (59.1%) of the patients treated, returned for test-of-cure. In the data given, it is assumed that no delayed reactions occurred in the remaining 192 (40.9%) treated patients who did not report back to the Clinic. This assumption is probably valid in that the temperament of the venereal disease patient is such that he will usually seek consultation for difficulties arising, in his opinion, from treatment.

TABLE III

PERCENTAGE DISTRIBUTION OF ALL PATIENTS INVESTIGATED FOR GONORRHOEA BY TYPE OF PENICILLIN ADMINISTERED AND REACTIONS ENCOUNTERED, VANCOUVER CLINIC, AUGUST 1, 1954 – JUNE 30, 1955

Reaction	PAM		BAP	
	No.	%	No.	%
Immediate Local	10	2.0	259	55.2
Immediate General	1	0.2	3	0.6
Delayed	2	0.4	—	—
No Reaction	490	97.4	207	44.2
TOTAL	503	100.0	469	100.0

The commonest type of reaction encountered was a localized one consisting of numbness, stiffness, and soreness at the point of injection, often accompanied by radiation to the thigh and leg, and occasionally of such degree as to restrict motion. This immediate local reaction was reported in 55.2% of patients following BAP and in 2% of patients after PAM. In all, a total of 4 immediate generalized reactions were encountered. Three of these appeared to be psychogenic in origin and hence relatively insignificant. The fourth, following BAP, consisted of angioneurotic oedema, erythema, and pruritis with production of copious respiratory secretion. Only two delayed reactions were reported. These occurred seven to ten days after administration of PAM and were both urticarial in type.

DISCUSSION

Reference has been made previously to the fact that of the 972 patients treated, only one-half were finally proven to have had a gonorrhoeal infection, although there were important differences as between the two sexes. Thus, 56.3% of the male patients treated were confirmed as gonorrhoea cases, as compared with only 26.4% of the females (Table I). The percentage of females found infected probably does not reflect the true state of affairs in view of the difficulties known to be associated with the bacteriologic diagnosis of gonorrhoea in women and the fact that nearly three-quarters of the females in the study group were known to have been in contact with infection or were considered promiscuous on the basis of their previous history. In the case of both sexes, it is surprising that with such a combination of diagnostic resources (clinical, epidemiological and bacteriologic), 43.7% of the males and 73.6% of the females could not be proven to have had gonorrhoea but nevertheless had to be treated as a public health expedient.

In the case of the 470 patients confirmed as having had gonorrhoea, comparison of the cure rates for PAM and BAP showed no evidence of a significant difference between drugs (Table II) for either sex. It must be concluded that BAP is equally as efficient as PAM in the treatment of patients of either sex with acute gonorrhoea.

For all patients treated, the overall incidence of post-treatment reactions was

2.6% for PAM as compared with 55.8% in the case of BAP (Table III). The incidence of generalized and delayed reactions was not statistically significant as between the two drugs but whereas 55.2% of BAP-treated patients complained of some local reaction, this was encountered in only 2.0% of those given PAM. This is one of the most important facts to emerge from this study and might be considered by some an objection to the routine use of BAP for the treatment of acute gonorrhoea since anticipation of painful therapy is a deterring factor to the infected patient who seeks treatment.

Finally, it should be re-emphasized that BAP is equally as efficient as PAM in the treatment of acute gonorrhoea and hence an enumeration of the advantages and disadvantages of the two products might be considered in order. BAP has the advantages of greater stability, greater ease of administration and smaller injection volume per dose, than PAM. It has the minor disadvantage of being more costly, and the major disadvantage of an incidence of 55.2% of patients experiencing local reaction to injection. PAM, on the other hand, has the advantages of being relatively inexpensive and of having a low incidence of local reactions (2.0%). The disadvantages of PAM are the greater difficulty of administration and the larger injection volume needed to contain the same dosage.

Consequent to the above, it would appear that when the relative advantages and disadvantages are considered PAM is preferable to BAP for the routine therapy of acute gonorrhoea.

Summary

1. In this series of bacteriologically-proven gonorrhoea cases treated with two types of penicillin (PAM and BAP), there was no evidence of a significant difference between the cure rates for males and females for either drug.

2. BAP had the major disadvantage of immediate local reaction at the injection site in over one-half of the patients so treated.

3. PAM is preferable to BAP for the routine therapy of acute gonorrhoea.

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REFERENCES

1. Elias, W., et al.: Antibiotics and Chemotherapy, 1951, *1*: 491.
2. Szabo, J. L., et al.: Antibiotics and Chemotherapy, 1951, *1*: 499.
3. O'Brien, J. F., and Smith, C. A.: Amer. J. Syph., Gonor., and Ven. Dis., 1952, *36*: 519.
4. Lepper, M. H., et al.: Antibiotics and Chemotherapy, 1952, *2*: 175.
5. Willcox, R. R.: Amer. J. Syph., Gonor., and Ven. Dis., 1954, *38*: 469.
6. Fletcher, A. P., and Knappett, C. R.: Brit. Med. J., 1953, *1*: 188.
7. Grekin, R. H., and O'Brien, J. F.: Amer. J. Syph., Gonor., and Ven. Dis., 1954, *38*: 143.
8. Kanee, B., and Nelson, A. J.: Amer. J. Syph., Gonor., and Ven. Dis., 1954, *38*: 354.

A Program for the Ineducable-Trainable Child

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IT is necessary to define in some way what we mean by the term ineducable-trainable child. Modifications of the test devised by Binet are still generally used to measure intelligence. The test yields a figure, the Intelligence Quotient, which places a child in one of a number of named categories. Thus a child with an I.Q. of 90–110 is termed Normal; with an I.Q. of 80–90, Dull Normal; I.Q. 70–80, Borderline; 50–70, Moron; 25–50, Imbecile, and below 25 Idiot. The level of 50 on the scale is crucial since if the I.Q. is below this figure a child is considered ineducable and may be excluded from school. Nevertheless he may respond to training. It is the ineducable child with an I.Q. from 25–50 with whom we will be concerned.

Many of the terms applied to the retarded child are unfortunate and have done much to slow progress in doing something about this serious and considerable community problem. Most of the popular terms are of a negative nature with distasteful connotations for example idiot, imbecile, moron, feeble minded, retarded, backward. Ineducable is a term that is acceptable at least to the educator since its use immediately frees him from any feeling of responsibility; the child is ineducable! Trainable is a term that is somewhat less negative and more hopeful and it is encouraging to see its increasing use.

We do not know how many ineducable-trainable children there are in the community. Many are not recognized until they reach school age. A good many are recognized by the parents and, because of a feeling of shame or guilt, or hopelessness, are kept at home and even hidden. There has been no comprehensive survey of the size of the problem in Canada. From a comprehensive survey in England of a joint Education and Board of Control Committee, the figure for those with an I.Q. between 25–50 is 1.2 per 1,000 population. On this basis therefore in Metropolitan Toronto, with a population of about 1,300,000 there would be about 1,600 people with an I.Q. of 25–50; approximately 250 would be 5–15 years of age. It is obvious that the problem is large and serious.

Many retarded children go to an Institution such as the Ontario Hospital Training Schools at Orillia and Smiths Falls. This solves the problem for the markedly retarded who require total care. It helps solve the problem too where financial, housing, domestic and parental problems make care at home difficult. It does however only partly answer the problem. The numbers are far too great for the accommodation available in Institutions and the waiting lists are long. In addition, and more important, there is the common attitude of the

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[2]This project was financed with funds allocated by the Province of Ontario under the National Health Grants program of the Department of National Health and Welfare, Ottawa.

parents who refuse to consider placing the child in an Institution. There are other factors operating in the parents' firm determination to keep their children at home but their contention about the importance of growing up with parents in a good home may be difficult to refute. More tangible arguments for the child staying in the home are financial ones. There is no doubt that it is cheaper to maintain the child in a home than in an Institution.

With these factors in mind, particularly the accommodation in relation to demand, high cost of maintaining the child in an Institution and the lack of facilities for the ineducable child in the community, the Department of Public Health of Toronto, with financial assistance from the Federal Health Grants and thus with the cooperation of Provincial and Federal authorities, started a pilot project, designated The Training Unit for Mentally Retarded Children,

Training Unit for Mentally Retarded Children

The Federal Mental Health Grant was not awarded to fill a need for facilities in the community. Rather the purpose was to study the problem of the ineducable child. Among the questions to be answered were: whether the pressure on institutions could be relieved by a program in the community; what form this program might or should take; what response the ineducable child might make to a training program; the type of training necessary; cost of the program and so on.

There was considerable difficulty in obtaining suitable quarters. Suggestions were made that empty classrooms in some of the schools in central Toronto might be used. There was objection that these children would be disturbing to the others in the school because of noisiness, appearance and so on. There were other difficulties in finding suitable premises such as restrictive by-laws. Quarters were finally obtained in the Sunday School rooms of a church. These were quite satisfactory. Two large assembly halls lent themselves well to group activities and there were smaller rooms for other purposes. The walls were movable so that the size of a classroom could be varied to suit the need. Adequate lavatory and kitchen facilities were available. There were several disadvantages. There was no adequate outside play area; storage area was restricted; it was impossible to use the rooms for other than the morning period because of church needs; and the location at some distance from the centre of the city increased transportation time and cost.

The staff consisted of three instructors, trained teachers, all with previous experience with retarded children but not in a similar setting. A psychologist was employed full time. The services of the Department of Public Health Psychiatrist were given in a consulting and supervisory capacity without charge to the grant, as were the services of a public health nurse. The nurse visited the Centre weekly, and otherwise as indicated, with the usual function of a public health nurse in the School Health Service. The janitor, part time, later supervised some of the boys in simple wood working.

Selection of Children

In the selection of children it was decided (a) to limit the age from 6 to 12 allowing for fair homogeneity of size; (b) that children with any serious

physical disability such as cerebral palsy, blindness, deafness, paralysis, should not be accepted; (c) that the I.Q. should be between 40 and 50. The upper limit of 50 dictated that all of the children were too low intellectually to be accepted in ordinary schools. The number was set at 30. Thus there were 10 children to an Instructor.

There were 19 boys and 11 girls. The 40–50 I.Q. was not adhered to too rigidly, and 10 of our 30 had a mean I.Q. of less than 40.

Without specific selection 9 of the 30 were Mongoloid children. Of the remaining 21 children, 13 could be termed primary defectives, that is, no cause other than heredity was known. The remaining 8 were secondary defectives. Brain injury had occurred for example from anoxia at birth, mild cerebral palsy, meningitis, encephalitis and mild hydrocephalus. Seizures had occurred in at least 8 of the children and 3 were still on therapy for epilepsy. If there was any question in the initial selection the child was accepted at the Unit for a one month trial period.

The appearance of some of the children was different from that of the average child of the same age but most of them were well dressed, clean, neat, presentable, normal looking children who were sensitive, easily hurt, became angry, sad, cried, laughed, argued, fought and shared things like any other child.

Program

The children were transported to and from the Unit in two station wagons provided through the grant and manned by an off-time ambulance driver attendant. Even here the training resulted, in the disappearance of early noisy, fighting, teasing behaviour, and in more acceptable conduct in the family car and public conveyances.

The program was carried on five half-days weekly from 9:00 to 11:30 a.m. with holidays usually somewhat shorter than the ordinary schools. It was generally aimed at helping the child to be happier and better adjusted in the home and in the community. Thus a major focus was on social adjustment.

Training here was at varied levels from learning to accept, adjust and respond to the Instructor, to learning to get along with the other children. This ranged from a cooperative relationship with one or two children to a controlled relationship with others in the whole group. The Psychologist made a valuable contribution here. With difficulties of group behaviour she was able to separate the problem children from the large group and to give them individual help. Of the children who could not get along with anyone the majority progressed to a very satisfactory adjustment with adults in the home and with other children in the neighbourhood. The group activities ranged from free permissive recess play to rhythm band, group sing songs, games and, once weekly, a short service in the church chapel. At parties such as at Christmas, the children put on a commendable, and in some respects an amazingly good program. From these experiences they learned what is expected of them in similar situations elsewhere and as a result they were able to conduct themselves in a socially acceptable fashion. Most could, for example, be taken to church without difficulty.

A good deal of time was spent in developing self care. Thus the children were taught neatness and orderliness about their dress and appearance. They were taught how to dress and undress themselves, do up buttons and tie shoes. At mid-morning break they were taught good toilet and washing habits. A mid-morning lunch gave training in good eating habits, table setting, serving and so on. Drooling was common at the start. When it occurred later a cause such as a disagreement at home could usually be found. These efforts helped the family greatly in reducing the amount of work and attention.

Emphasis was also placed on self protection. They were constantly drilled on the meaning of traffic lights, the dangers of medicine cabinets and other hazards of childhood. They were taught the use of play equipment and a respect for property of others.

Efforts were directed towards increasing the attention span. Initially attention wandered rapidly in an almost uncontrolled manner. The children would attend to a story for 2–3 minutes only and the Instructor was unable to leave the room without inviting chaos. Gradually they learned to attend, and to concentrate, so that even the whole group could be left alone with little more disturbance than in an average classroom, and under supervision they could attend to one project for up to 25 minutes. At home this worked a remarkable change. The children could be left alone to play by themselves, they were happier and the mother was given a great deal more freedom.

One of the greatest factors in increasing the attention span was the use of music. The children joined in singing and in the fun of dramatic songs. Music was also used to assist in relaxation for a few minutes during the play period.

The brain-injured children characteristically showed somewhat greater distractibility, inattentiveness, and restlessness than the other children. In general an attempt was made to reduce the distracting stimuli by special seating in the classroom, etc. The approach was, where possible, to offer a more frequent change of activity rather than drill and repetition.

Learning muscle control was important since many of the children were very awkward in both fine and gross movements to the extent that they would stand out as being different. They responded to training. In the use of the hands the activities ranged from block work, pasting, printing and jig-saws to bouncing a ball. They learned to skip, dance, climb stairs, do physical training exercises, ride a bicycle, tricycle or scooter. With these skills the awkwardness decreased and, in effect, they appeared more normal.

The academic aspect of the program was approached with caution and was not emphasized. There was training in printing. If the response was not very profound academically at least muscle control improved. Progress was evident in that about two out of three could print their own names. Reading was similarly on a simple level with emphasis on words like STOP, GO, DANGER, POISON, KEEP OFF. An occasional child progressed through the simplest school readers. In arithmetic this progress was similarly slow and approached mostly in terms of games.

The speech training deserved the emphasis that was placed on it. Only about 7 of the original 30 could be said to have normal speech and the others could

be understood only with difficulty, if at all. Speech training was carried on by the Senior Instructor and encouraged in the classroom and in the group activities such as the sing-songs. Almost all of the children could finally be understood fairly well. This improved their ability to get along with others and the children themselves were as pleased as anyone with this progress.

With the approach to the problem through the parents the psychologist had the major role. The parents were interviewed about once a month. In almost every case they came alone. This in itself was a worthwhile step since it meant that many mothers left their children with someone else for the first time. Support and encouragement were necessary. The purpose of interviews was to evaluate the progress and to counsel the parents. The problems of the child in the home were discussed as well as factors within the home as they affected the child. Planning for the future was emphasized. In many, planned guardianship in the community in the event of the parents' death was possible as the child became socially acceptable from the standpoint of behaviour though he still required supervision.

The Unit training extended to the home and the parents contributed greatly to the success of the program. Suggestions were made regarding habit training, use of toys and so on. Both instructors and psychologist advised the parents in these problems.

Another important part of the approach to the parents was the discussion of attitudes in the home and community to the retarded child. If the feeling was not actually expressed, the parents were often convinced that others looked upon their children with distaste and even disgust. They were very sensitive about this real or imagined community attitude. They saw their children avoided, teased and taunted by other children; they saw other parents keeping their children away from the retarded child; they commonly felt shame and guilt. Looking for a cause, the family trees were searched, and blame perhaps placed where another mentally retarded person was found. All of these factors, many if not all based on misunderstandings and misinterpretations, added to the parents' burden.

Group meetings of the parents were held once a month. Initially these were conducted by the instructors and psychologist but later the parents assumed a major role in the discussion of problems of the retarded child.

The Training Unit operated until June, 1954, when support from Federal Health Grants was withdrawn. Fortunately the Parents' Council for Retarded Children, in response to the need, had opened schools where the majority of our children could be absorbed.

Results

Some of the results in the project have already been discussed. A few of the findings and our impressions may be reviewed.

The expenditures were approximately $20,000 a year. This included staff salaries of $10,200, equipment and teaching supplies $2,000, rent $1,800 and transportation $6,000. Thus the cost was $650–$700 per pupil per year. How-

ever, rent amounted to $60 per pupil, and transportation to $200 per pupil. There is no doubt that this cost might be reduced considerably under favourable circumstances. It is still an expensive undertaking.

There is no doubt that there was a great deal of improvement in behaviour and adjustment in the home and in the neighbourhood. There is no doubt that the children responded to training in self care, self protection, muscle co-ordination and in speech.

At the start it was clear that assigning more than 8 children to an instructor was to invite bedlam. Later 15 could be handled by one instructor for significant periods. Our instructors, with their background of teaching, were excellent. However many of the methods were developed with no previous precedent or experience. In a similar project operated by the Department of Public Health in York Township the instructors had a nursery school background. In England a similar project will take girls with no previous experience and train them as Instructors. It is apparent that interest in these children, a liking for children and a personality endowed with an abundance of patience and calmness are the most important qualifications.

As with the brain-injured children mentioned previously, the Mongoloid children presented particular problems. They were generally noisy, obstinate, argumentative, jealous and tantalizing. They were on the average, far from the placid, happy children commonly described. Several approaches were tried with them but the most successful we found was to keep them together as one class with one Instructor who had particular skill in handling them. Experience indicated that the total program was best served by this arrangement. Although in the original unselected population about one-third were Mongoloid, with later replacements a very high percentage of the applicants were Mongoloid and thus selection at that point was necessary in order to maintain a reasonable ratio of Mongoloid, primary, and secondary defectives.

The total number of children who attended the Unit was forty-four. The turnover was explained by change of residence and by those leaving on reaching the age of 12. In addition two children were taken on a trial period during selection; their behaviour was too disturbing in the classroom and it was necessary to exclude them. Both of these children tested in the neighbourhood of I.Q. 30. However two other children who tested about the same level made a fairly satisfactory adjustment and thus no conclusions could be reached as to the lower limit of I.Q. in selection. Another factor, in warranting caution in considering exclusion because of low test rating is the greater unreliability of the tests at the lower levels.

During the life of the Unit three children were transferred to Opportunity Class in public school and continued to make a satisfactory adjustment there. A Mongoloid child testing about 50 and reading at the grade 1 level quite well was given an unsuccessful trial in Opportunity Class. He was excluded because of disturbed behaviour, even though his behaviour at the Unit had been quite acceptable. At the closing of the Unit four other children including one Mongoloid child were accepted in Opportunity Class and have adjusted well. Thus seven of the forty-four children progressed to ordinary schools.

Seven children were admitted to the Ontario Hospital Training School at Orillia. With some of these the counselling service, particularly by the psychologist, helped the parents to accept this move which, at the time of admission to the Unit, appeared to the Staff to be inevitable. It is impossible to tell how many of the children attending the Unit would otherwise have had to be admitted to the Orillia Training School; it is certain that many of the pressures that would have made consideration of this step necessary were relieved.

Of the other thirty children the majority were absorbed in the schools operated by the Parents' Council for Retarded Children. They had no difficulty in adjusting to this new if somewhat similar setting.

Psychological retests were done at the time the children left the Unit. As would be expected there was a general but not too significant improvement in the test results. This, of course, was related to such factors as improved emotional adjustment and improved behaviour making the tests easier to administer. The test results were of major significance only when the improvement brought the I.Q. to above 50, thus allowing recommendation that the children might be accepted in ordinary schools. There was a much more significant change in the results of the Vineland Social Maturity Scale that was administered on admission and when children left the Unit. There was generally a considerable improvement consistent with the child's improvement in behaviour training and emotional adjustment. These results are being reported more fully elsewhere.

In general the younger children responded more rapidly to the training program with improvement in behaviour suggesting that many of the problems that they presented in our program might be avoided by starting school-like training at an earlier age.

Summary

The program of training for children who, by virtue of low intelligence, have been excluded from ordinary schools has been described.

The training program for these children gave worth-while results with improved adjustment of the child in many respects and alleviation of many of the problems that the retarded child creates in the home and in the community.

Of the forty-four children who attended the Training Unit, 7 progressed to Opportunity Classes in the ordinary schools, 7 were admitted to the Ontario Hospital Training School at Orillia, and the others carried on in settings similar to our Unit.

The importance of counselling with parents, in this case by a psychologist, is emphasized to carry a training program to the home and to assist parents with the many problems that the retarded child presents. It is suggested that public health workers, particularly public health nurses, can play an important role in this aspect of the problem of the retarded child, particularly by giving advice and support to the parents and by giving support to the parents' groups that have been and are being formed in various centres.

Atmospheric Pollution and Public Health

MORRIS KATZ,[1] M.Sc., PH.D.

THE growth of population, industry and urban communities continues at a comparatively rapid pace in North America. The population of Canada now stands at about 15 million and that of the United States at about 165 million. By 1975, it is estimated that Canada will have a population of over 30 million and the United States well over 225 million. Such a tremendous rate of growth involves corresponding demands on fuels of all kinds for power, heat and transportation. Other uses of fuel involve the steel, non-ferrous metallurgical and smelting industries, oil refinery, chemical, pulp and paper, rubber, textile, electrical and many more process operations. In every large industrial community, thousands of tons of combustion products and other process wastes consisting of gases, vapors, fumes, mists and dusts are poured into the atmosphere daily. This vast emission of pollutants must be dispersed and diluted rapidly to harmless proportions if we are to continue to live and breathe normally.

However, over large urban centres the capacity of the atmosphere to receive and disperse man-made contaminants without serious discomfort to human welfare appears to be approaching a limit. This is indicated by the increasing incidence of smog in many cities and the growth of pollution problems in communities which were accustomed to relatively clean air in the past. Such conditions are accentuated when unfavourable factors of topography, natural fog and temperature inversions combine to limit the atmospheric volume available for dilution.

Until recently, the public was singularly unconcerned about the quality of the air which enters the lungs, although the purity of food and water supplies has been considered of sufficient importance to warrant proper safeguarding for many years. In point of fact the average human adult requires about thirty pounds of air for breathing in a day while he consumes about two and three-quarter pounds of food and drinks four and a half pounds of water. It has required a series of air pollution disasters and increasing incidence of nuisance and irritating effects, such as the perennial Los Angeles smog, to awaken public interest in a scientific appraisal of the problem and in control measures.

The Nature of Urban Pollution

Much has been accomplished in the United States and elsewhere, including the current studies for the International Joint Commission and investigations of the Laboratory Services, Occupational Health Division, Department of

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National Health and Welfare in Canada, on the application of new and known analytical techniques to the elucidation of the nature and concentration of some of the large number of contaminants present in the air over a large industrial community. Measurements of dustfall, suspended particulate matter and sulphur dioxide, although a basic requirement in any survey of atmospheric conditions, represent only the first step in an attack on this problem. Other general studies on visibility, smoke and haze concentrations, and reduction in solar illumination or ultra-violet radiation tell us little about the nature and constitution of contaminants. More skillful and laborious methods must be employed such as the electron microscope, x-ray diffraction, chromatographic adsorption, and identification by ultraviolet or infrared absorption and by emission spectroscopy.

A comparison of the basic differences in the nature of air pollution in the Windsor-Detroit area and in Los Angeles county illustrates the variation in complexity of the problem due to differences in industrial activities, climate and topography. Los Angeles county has a population of about 4 million while the international Detroit river area contains somewhat less than 3 million people, with over 90% living on the U.S. side. Whereas solid fuel is used preponderantly in the Detroit river area, to the extent of about 15 million tons annually, gaseous and liquid fuels only are employed in Los Angeles county. Industries in the Detroit river area are much more diversified than in Los Angeles, with the main emphasis on automotive, steel and non-ferrous metals, heavy chemical, solvent, organic chemical and pharmaceutical, rubber and electrical products. Combustion waste products from power plants and from transportation sources, such as vessels, railway locomotives and automobile vehicles are also important. In the Los Angeles area, the predominant industry is oil refining, although industrial activity also includes metal and mineral, fertilizer, chemical, paint, roofing, rubber, soap and food processing. Public activities such as the operation of about 2 million automobiles and the burning of thousands of tons of trash and rubbish daily in household backyard incinerators aggravate the pollution problem in Los Angeles.

The Los Angeles basin is hemmed in on three sides by high mountains that limit the lateral movement of land and sea breezes. An inversion layer, known as the Pacific inversion, which consists of a warm air mass above cooler air extending aloft from the mountains to far beyond the California coast into the Pacific ocean, limits vertical diffusion. During many days of the year the base of this inversion layer sinks to less than 1000 feet above ground level (2). Recurrent visitations of haze and smog cause eye irritation, nose and throat discomforts, widespread crop damage running into several million dollars annually, rapid deterioration of rubber products, and costly traffic dislocation due to reduced visibility.

The nature of air contaminants in this area differs from that of other regions including Windsor-Detroit in several important respects. Significantly higher concentrations of "oxidant" or ozone, hydrocarbons and other organic vapours, and oxides of nitrogen have been reported. The aerosols or suspended particulates are of relatively smaller particle size and contain a higher amount of organic matter than that found in 13 other American cities. Lead forms a relatively important part of the inorganic fraction of the suspended particulates. In contrast to the Windsor-Detroit area and many other cities the dustfall and sulphur dioxide levels are low.

The mechanisms involved in the formation of smog in the Los Angeles atmosphere is not completely understood as yet. Recent investigations indicate that smog formation is due to the interaction of certain hydrocarbons and oxides of nitrogen in the presence of sunlight after these impurities are released to the air (2, 3).

Windsor-Detroit Area

Continuous methods of analysis and instrumentation are being employed, as much as possible, to study the variations in pollution levels in the Detroit river area. The results are correlated with meteorological findings. Systematic observations of dustfall, suspended particulate matter, and sulphur dioxide

have been maintained since the fall of 1950. Continuous measurements of sulphur dioxide are made at five sampling stations in Windsor and the surrounding area and at three stations in Detroit. Dustfall is measured at forty stations divided equally between Detroit and Greater Windsor. Periodic surveys of suspended particulates, representative of aerosol pollution, have been made with networks of 20 to 30 sampling stations operated continuously for six-week periods to study the area-wide distribution of contaminants and transboundary effects (4, 5, 6).

Mean levels of sulphur dioxide vary from about 0.14 p.p.m. in the Detroit high pollution area, 0.06 p.p.m. in the Windsor high pollution area, to 0.01 p.p.m. or lower at stations 15 to 20 miles distant from the Detroit river. The maximum 30-minute average concentration is about 1.45 p.p.m. In Los Angeles a recent survey indicates a maximum level of only 0.3 p.p.m. Both mean and maximum values for sulphur dioxide are considerably higher than those found in Los Angeles county.

The dustfall level in the Detroit river area is comparable to that found in New York and Chicago. It is two or three times greater than that reported for Los Angeles. The mean values in tons per square mile per month range from about 65 to over 100 in the industrial sections to 40–65 in the residential areas and 25–35 in the suburban and semi-rural areas. Dustfall determinations may vary considerably with the type of collector used, especially if the design does not include adequate safeguards to prevent loss of collected material by wind eddies.

Aerosol concentrations are comparable to those reported for the Los Angeles area. Suspended particulate levels range from less than about 250 micrograms per cubic meter on clear days to over 500–1000 micrograms during periods of smog. Oxidant levels are considerably lower than those found in the Los Angeles area and usually are less than 0.05 p.p.m. The maximum reported by the Detroit Bureau of Industrial Hygiene is 0.28 p.p.m. in comparison with a maximum of 1.0 p.p.m. recently recorded at Los Angeles (2).

Health Aspects of Air Pollution

This is a controversial problem and much has been written about air pollution in relation to community health in recent years. It was concluded by the health panel at the United States Technical Conference on Air Pollution, convened at the request of President Truman at Washington, D.C., in May 1950, that apart from acute manifestations, caused primarily by irritation of the respiratory tract and other parts of the body, in localized areas under unusual weather conditions, the effects of the more common atmospheric pollutants upon the general health of the population of our urban and industrial centres have not been demonstrated in the form of authenticated chronic disease processes. The complexity of the problem is such that further evidence must be sought before the hazard to public health can be appraised adequately (10). The situation remains much the same today.

Nelson (7) has discussed recently the biological aspects of this problem under the headings of (1) systemic diseases, (2) eye irritation, (3) skin irritation, (4) respiratory irritation and (5) lung cancer. With the exception of systemic diseases which are of interest

in isolated special cases only, all of the biological effects, noted above, involve the primary action of pollutants at a body surface. Skin irritation may be encountered occasionally from the action of pollutants but it is only of minor consequence. The most significant biological effects are those involving irritation of the sensitive pulmonary tissues and the eyes. Irritation of the respiratory tract was a significant common feature of the symptoms in the pollution disasters of the Meuse Valley, Donora and London.

The above acute symptoms and the resultant deaths could not be ascribed to the action of any one contaminant, but rather to a synergistic factor as first postulated in the Donora Report (9). The lethal effects were confined almost wholly to persons already suffering from chronic respiratory and cardio-vascular disorders.

Our knowledge of the chronic effects of human exposure to irritants and other toxic agents in the atmosphere is based almost entirely on industrial medical experience and animal experimentation, the results of which have led to the adoption of the well-known threshold limit of maximum allowable concentrations. The low concentrations and long-continued exposure to complex mixtures of contaminants in community air pollution presents an entirely different problem and a new investigative approach is necessary.

Watkinson has discussed recently some of the hypotheses put forward to explain the unaccountably high toxic and irritant properties of urban smogs, such as synergism, adsorption and solubility (11). The effects of a mixture of substances on an exposed organism, if each component is capable of inducing some pathological change, will be either additive or markedly greater by a synergistic factor. The adsorption hypothesis is based on the known increase in surface area of small particles such as carbon, fly ash, and metallic compounds, and the enhanced adsorption of gases and vapours as a result of physical and chemical factors. Such particles after penetration into the lungs might release relatively large amounts of irritants in localized areas by interfacial action from a smog atmosphere containing much lower concentrations of such contaminants per unit volume. A similar concentration process might be operative in the case of water soluble compounds such as sulphur dioxide, oxides of nitrogen, soluble fluorides and other salts. Work is in progress at the Occupational Health Laboratories of the Department of National Health and Welfare to provide evidence relating to these three hypotheses (11).

In the Windsor-Detroit international investigation a modified epidemiological approach has been utilized in the study of the effects of prevailing atmospheric contaminants on health in areas of relatively high and low pollution. This survey covers a period of about two years and the methods employed have been described by Peart and Josie (8). The high and low pollution areas were selected from the results of extensive air sampling networks. The sickness experience of members of households in these areas of different average pollution levels has been recorded every two weeks by trained enumerators. Continuous records have been maintained of the levels of air pollution and meteorological changes in the environment. Population groups in four areas in Detroit and two in Windsor have been matched with reference to racial, socioeconomic and other factors, as far as practicable. In addition, groups of households in two small towns, which do not contain heavy industry and are situated beyond the major influence of contamination from the Detroit river area, have been subjected to similar observations on symptoms and illnesses, with continuous testing of the environment, as a type of control.

The objectives of this study are not only to evaluate the possible health effects of long continued exposure to common pollutants in the urban environment but to reveal the responses to comparatively rapid, short period increases in pollution load, such as that produced during periods of inversion and smog. The health information, which has been collected, includes comprehensive records of all types of illness and symptoms, including those associated with chronic respiratory disease, and non-chronic ailments. The massive amount of

data gathered in this two-year pilot study is now undergoing systematic evaluation by a group of experts. The preliminary findings may be available in the near future.

According to Dr. Justin M. Andrews of the United States Public Health Service (1), "more epidemiological studies of this general type should be developed in other cities where the nature of the air pollution problem is different but where it is presumed that health defects are being produced." Such surveys will ultimately lead to more productive techniques and to better indices of atmospheric pollution than we have at present.

Control of Air Pollution

Although much has been accomplished by industry in the control and recovery of a substantial percentage of dusts and gases at the source by installation of appropriate equipment, this is offset by the expansion and multiplication of industries in areas which already contain a high concentration of industrial plants. The problem created by automotive exhaust is in some large cities, such as Los Angeles, overshadowing that of the effluents from industry. An additional complication is the possibility of chemical interaction of some contaminants in the atmosphere to form products more harmful than the original wastes.

Effective pollution control is in many instances limited by economics and a lack of knowledge of practicable engineering methods. The recovery of useful by-products is the best approach and has been applied successfully in the smelting, steel and petroleum refining industries. Waste sulphur dioxide or hydrogen sulphide can be converted to elemental sulphur, sulphuric acid or phosphate fertilizer provided markets are available. However, where control is necessary for the health of man and animals, even non-marketable process wastes must be recovered or controlled. This includes arsenic from smelting of arsenical ores, fluorides from aluminium refining and other processes, objectionable metallic fumes and dusts, and various irritating and odouriferous compounds such as mercaptans, phenols, acid mists and lachrimators.

Federal legislation in the United States, adopted in July 1955, provides an appropriation of $25 million at the rate of $5 million for each of 5 consecutive years at the disposal of the Secretary of Health, Education and Welfare, with assistance by the United States Public Health Service for the support of air pollution control. Under this Bill the primary responsibilities and rights of the States and local governments in controlling air pollution are recognized. However, the federal program is to support and conduct technical research to devise and develop methods of abating pollution which constitutes a danger to public health and welfare, causes injury to agricultural crops and livestock, results in damage or deterioration of property, and creates hazards to air and ground transportation.

Events in Great Britain also indicate a fresh approach to control of emissions in this heavily industrialized country. For many years the controls of effluents from heavy industry has been vested in the Alkali, etc., Works Act. Other industrial process wastes, including smoke, grit and dust, come under the control provisions of the Public Health Act of 1936. Local authorities may pass by-laws regulating smoke emission under certain provisions of this Act. However, this Act does not contain provisions for regulating smoke from domestic chimneys, a fact which has been the subject of serious criticism recently. Federal research on various aspects of pollution in Britain has been carried on by the Department of Scientific and Industrial Research for over 25 years. Following the London smog disaster of 1952, a Committee under Sir Hugh Beaver has recommended comprehensive changes in the control of all types of emissions under a new "Clean Air Act".

Canada now lags far behind Britain and the United States in its consideration of the problem of atmospheric pollution at all government levels. However, there are straws in the wind. The studies of the International Joint Commission provide information of national interest. A Committee of the Engineering Institute of Canada has formulated a preliminary schedule of example regulations for pollution control suitable for municipalities on a local and regional basis. This work is being continued by a Committee on Air Pollution Control of the Canadian Standards Association. A Select Committee of the Ontario Legislature is currently engaged in a study of all aspects of the problem.

Recently, certain responsibilities of the Federal Government in connection with atmospheric pollution have been assumed by the Department of National Health and Welfare. These involve an extension of advisory and information services to other departments, provinces and municipalities and continuation of studies of national concern, formerly carried out under the auspices of the International Joint Commission. Assistance may be extended, upon request, to governmental agencies concerned with health aspects and control of atmospheric pollution.

REFERENCES

1. Andrews, J. M.: Proceedings Third National Air Pollution Symposium, (Stanford Research Institute), Los Angeles, Calif., April, 1955.
2. California State Department of Public Health, "Clean Air for California", Initial Report, San Francisco, March, 1955.
3. Haagen-Smit, A. J.: Eng. Science Monthly, December, 1954, Calif. Inst. Technology.
4. Katz, M.: Engineering Journal (Canada), 1955, 38: 426.
5. Katz, M.: Am. J. Pub. Health, 1955, *45*: 298.
6. Katz, M., Fredrick, W. G., and Clayton, G. D.: Proc. Second Nat. Air Pollution Symposium, Los Angeles, Calif., 94 (1952).
7. Nelson, N.: "Problems and Control of Air Pollution" Chap. 3, F. S. Mallette, Reinhold Pub. Corp., New York, 1955.
8. Peart, A. F. W., and Josie, G. H.: Arch. Ind. Hyg. and Occup. Med., 1953, 7: 326.
9. U.S. Public Health Service, Pub. Health Bull. 306 (1949).
10. U.S. Technical Conference, Proceedings, "Air Pollution," Louis C. McCabe, Chairman, McGraw-Hill Book Co., 1952.
11. Watkinson, E. A.: "Problems and Control of Air Pollution" Chap. 8, F. S. Mallette, Reinhold Pub. Corp., New York, 1955.

Dental Services in Toronto[2]

F. H. COMPTON,[1] D.D.S., D.D.P.H.,

THE Division of Dental Services of the Department of Public Health is charged with the operation of a school dental inspection service and limited clinical treatment services. In addition, the division conducts a preventive orthodontia clinic, the Riverdale Preschool Dental Projects, and administers dental services under the provision of the tuberculosis aftercare program and dental services for indigent adults in hospital dental departments. The division also acts in a consultant capacity to other divisions of the department and to community agencies in all matters relating to dental public health. Programs are developed with a view of accomplishing something of lasting benefit to dental health rather than resorting to short term expedients. This is a basic fact too often misunderstood by those with whom we co-operate and by the public whom we wish to serve. Yet the distinction is an extremely important one and must be understood to appreciate the pattern of the services.

School Dental Inspection Service

This service provides for annual dental inspection of elementary and secondary school children with notification to parents of conditions found. This encourages the individual child to seek early dental care while at the same time yielding information requisite to planning, direction and evaluation of programs. The procedures now followed conform to the recommendations of the Dental Statistics and Research Section of the Ontario Department of Health. The majority of children receive a qualitative screening for notifiable dental defects such as dental caries, premature loss of deciduous teeth, malocclusion, neglected oral hygiene and incipient periodontal disease. A much smaller group, selected on a random sampling basis, is subjected to a more searching quantitative examination, the findings from this latter group constituting the epidemiological basis for program evaluation. This calls for the annual examination of upwards of 90,000 children by some 32 dental inspection teams whose methods of examination must be carefully standardized. Moreover, the operation must be synchronized with the numerous other school health activities.

Clinical Treatment Services

The division is staffed by 6 full-time and 26 part-time dental clinicians. It is manifestly impossible for this limited personnel to meet total effective demand for dental care from the city's elementary and secondary school population at any given time. Moreover, in assessing needs and resources one must not overlook the fact that the metropolitan area is served by some 700 practising

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[2]The area bounded by the corporate limits of the city of Toronto and not the twelve municipalities, which, together with the city of Toronto, comprise the Municipality of Metropolitan Toronto.

dentists, giving Toronto one of the most favourable distributions of dentists in relation to population. The foregoing considerations—limitations of clinical personnel, and reasonably substantial community dental resources—are therefore important determining factors which influence our clinic admission policy and dictate for the more important dental health problems a priority rating governed by the unique characteristics of dental disease. Dental defects differ from most other ailments in that they accumulate as a result of neglect. Neglect permits extension, and treatment needs not only accumulate but frequently become highly complex. The problem must therefore be attacked at its source. There is pressing need for reduction of the prevalence of untreated dental caries through early diagnosis and prompt treatment before this disease has become well established. The approach must be based on utilizing available facilities for the largest number of children whose treatment needs can be adequately met on a current basis, rather than attempting to provide limited services to all children. Dental care commencing at an early age and furnished on an annual incremental basis requires less service time than for meeting accumulated needs and therefore makes for more effective utilization of available dental personnel. Consequently, three criteria—residence, economic status, and age—are employed in determining eligibility for admission to the clinics. Applicants must be resident in the city of Toronto. Parents or guardians must sign a declaration to the effect that they are financially unable to have their child's teeth treated by a family dentist. Applicants meeting these requirements are then referred to local operative clinics on a systematic basis, grade I children being assigned first. When this group is completed, kindergarten children are assigned, and so on in proper sequence, grades II, III, IV and V. The aim is to secure complete dental treatment of existing needs for each year's starting group in kindergarten and grade I, with recurring needs being met thereafter on an incremental or "annual crop" basis, from year to year.

For senior elementary school students, a special period is exclusively reserved daily at Central, Charles G. Fraser, Kimberley and Lord Dufferin clinics, appointments being given in the order in which requests are received. Requests from secondary school applicants, which are relatively infrequent, are also referred in limited numbers to these four clinics, following investigation of residence and economic status by the school nurse. Service in such cases is limited to that of a palliative nature, and it must be emphasized that limitations of personnel and equipment preclude anything of a more comprehensive nature. Furthermore, a heavy investment in additional facilities and personnel would not be justified for the small numbers presently involved.

Health education is considered an important function of these clinics. Preventive care services rendered in the clinics include restoration of deciduous and permanent teeth with commonly used filling materials such as silver amalgam alloys, synthetic porcelain and plastics. Extractions are performed when necessary. Selected young children may be referred to a central location where space maintenance appliances are provided to prevent irregularities arising from premature loss of deciduous teeth which later could only be corrected by rather extensive orthodontic treatment. Existing facilities preclude the provision of dentures, bridges, gold crowns, root canal therapy

and the like. Nor would there be any justification in diverting the limited personnel to this field at the cost of neglecting essential preventive services. It is gratifying that the Public Health Committee of the Academy of Dentistry is exploring the possibility of a limited co-operative arrangement with a service club for the provision of dentures to needy children.

The foregoing policy offers the means whereby the most constructive use is made of the available resources, facilities and dental manpower, in the most efficient and economical manner. Such an approach is, admittedly, a long-term, long-range proposition. But it is the only logical and practical approach to treatment.

Reference must also be made to the serious state of the physical plant. A combination of circumstances arising from necessary wartime economies and budget limitations in past years necessitated postponement of replacement of obsolete equipment in many clinics. Although gratifying progress has been recorded during the past two years with 7 clinics satisfactorily renovated and re-equipped and a further 2 in process of conversion, the situation in several other clinics still leaves much to be desired. It is unfortunate that in such cases service is interrupted from time to time by breakdown of obsolete equipment. If these clinics are to fulfill their functions adequately as preventive care and health teaching centres, it is imperative that they be located in clean, bright, airy quarters and that they be properly fitted with modern dental equipment.

Preventive Orthodontia Clinic

This clinic, which is largely supported through federal health grants, is staffed by a single orthodontist. Recognizing the impossibility of meeting total demand for orthodontic treatment through such limited service, administrative controls on admission were imposed in consultation with federal-provincial authorities when this clinic was inaugurated in 1950. The purpose of these controls was to restrict service to children from low income groups, and within these groups, to children below age ten where preventive measures can be applied with the result that more cases can be successfully treated than would otherwise be possible. The fact that only 115 cases were completed in the clinic during the period 1950–55 serves to underline the complexity of orthodontic treatment and the need for such an approach. There undoubtedly remain many children who cannot qualify for admission to this clinic and where treatment by a private orthodontist presents financial problems. The orthodontic department of the University dental clinic provides some additional facilities to the community, but here admission is governed by the applicant's suitability as a teaching subject. In the past, the Toronto Chapter, Ontario Dental Nurses' and Assistants' Association has also provided some financial assistance for orthodontic care for certain older children from low income families, and recently, additional facilities have been established at the New Mount Sinai hospital.

The Orthodontia Clinic permitted the establishment late in 1954 of facilities for space maintenance appliances. During the first eleven months since this preventive service was inaugurated, 95 cases have benefited (almost as many as have received orthodontic care during a six-year period).

Riverdale Preschool Dental Project

This is a test project, jointly sponsored by the Toronto East Dental Associa-

tion and the Department of Public Health, and supported through a federal health grant. It is the first organized program designed to improve the dental health of preschool age children in the city. As a community program relying very largely on private dental practitioners for the provision of necessary dental services, it is designed to create an intelligent demand for preventive care through parent counselling and systematic examination of preschool age children, and to assure the provision of necessary dental care by mobilizing all available resources in the test area.

The project is staffed by a dental hygienist, an assistant and a clerk-typist. The services offered include dental health teaching and consultation in district child health centres to parents of preschool children and to community groups and organizations. An annual dental screening examination service is directed in the first year primarily at three year olds, in the second year at three and four year olds, and in the third year at three, four and five year olds. Children requiring treatment are referred to family dentists, although a limited number, whose parents cannot finance private dental attention, are admitted to Department of Public Health dental clinics. The objective in both cases is the promotion of prompt attention to existing defects sustained by subsequent maintenance care. The program is therefore supplemented by a systematic follow-up service at intervals of 60, 90 and 120 days following examination and referral, to ascertain that treatment has been sought. To assess the results of this project, children coming under the program will be examined each year until they reach school age. The findings in this group, when they are five year olds, will then be compared to those of a similar age group who have not been exposed to the program. If successful, this approach may qualify for extension to other areas of the city. During the period September 29, 1955, to June 25, 1956, a total of 1,043 children were seen. 384 of these were referred for dental care and 144 had had all necessary dental treatment completed at the close of this period.

Tuberculosis Aftercare Program

The division administers a dental care program for persons in receipt of tuberculosis aftercare assistance under provision of the "Sanatoria for Consumptives Act". The Act requires municipalities to provide eligible persons with the "necessities of life" which are deemed to include dental care. Arrangements are made with private practitioners for the provision of necessary dental treatment, the scope of which is governed by the schedule of dental fees as authorized by the Workmen's Compensation Board and Royal College of Dental Surgeons of Ontario. During 1954, 29 patients received dental care amounting to $1,749, an average expenditure of $60.30 per case. During 1955, 38 patients received dental care amounting to $2,079, an expenditure of $54.76 per case.

Dental Care for Adults

Emergency dental care, limited to extractions and repair of existing dentures is available to unemployables in receipt of relief allowance under the Unemployment Relief Act. Other persons in receipt of social assistance, admitted

to hospitals or attending out-patient clinics for medical reasons, are eligible for admission to hospital dental departments for provision of extractions and dentures. Requisitions in respect of this latter group are processed through the Division of Dental Services. In view of these minimal facilities the Committee on Dental Needs and Resources of the Welfare Council of Toronto has directed some study to the overall dental needs of persons in receipt of social assistance or in marginal income groups, but there is general agreement that little can be done without considerable expansion of facilities at great expense which may well be beyond local means and resources.

Other Dental Facilities

Institutions other than the Department of Public Health which provide dental care to the community include the University clinic of the Faculty of Dentistry, the Hospital for Sick Children, the Children's Aid Society and the Hospital Dental Departments previously referred to. The University clinic functions during each academic year for a period of approximately seven months. Services are primarily designed to provide clinical experience for senior dental students and admission to the infirmary is entirely governed by the patient's suitability as a teaching case. Patients are required to pay for services received, the tariff being approximately one-third of that of the Workmen's Compensation Board.

The Dental Department at the Hospital for Sick Children is almost entirely restricted to in-patients. Although the majority of these patients are drawn from the metropolitan area, the hospital also admits patients from other parts of the province.

A most welcome addition to the list of community dental facilities is the new clinic recently opened at the Headquarter's Building of the Children's Aid Society to provide dental service to Children's Aid Society wards. This clinic, which functions six mornings each week on a year round basis, is staffed by two part-time dentists and a nurse-technician. In addition, an orthodontist attends two half days per month. Wards of the Children's Aid Society up to age 18 are eligible for services which include routine operative care, space maintenance appliances, and, at a later date, orthodontic appliances. Emphasis is placed on preventive dental care commencing at an early age and sustained by maintenance care on a half-yearly basis.

Summary

This brief review serves as a reassessment of the specialized problems encountered in this field and as a progress report.

There is a very real need for the community to have a thorough understanding of the dental health problem in order to achieve the most beneficial result from such investments as are made on a personal or community level. A most encouraging development in this respect is a proposal of the Academy of Dentistry to sponsor, in the near future, a "Workshop Conference" on dental health problems which would afford an opportunity for leaders in the fields of health, education and welfare to interpret their problems and to seek mutually acceptable solutions to these problems as they affect the dental health of the community.

Canadian Journal of Public Health

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The Canadian Sickness Survey

ONE of the most important contributions to the planning of the National Health program and the consideration of the problems of hospital, medical, dental and nursing care are the findings of the Canadian Sickness Survey. This nationwide study of illness in the general population of Canada was carried out during a twelve-month period, commencing in the autumn of 1950. It was initiated by the Department of National Health and Welfare and carried out by the ten provincial departments of health with Federal funds made available to the provinces through the National Health Grants program. The planning and organization of the Survey was a joint undertaking of the Dominion Bureau of Statistics and the Department of National Health and Welfare in consultation with the provinces. Each provincial health department co-operated fully in gathering the extensive body of information.

The object of the Canadian Sickness Survey was to obtain estimates of the incidence and prevalence of illness of all kinds, the amount of medical, nursing and other health care received and the volume of family expenditures for the various types of health services. The data compiled were thoroughly studied and a number of publications have been prepared and released jointly by the Dominion Bureau of Statistics and the Department of National Health and Welfare. Eight publications have been issued and two are in the course of preparation. To present the findings of these publications in the Canadian Journal of Public Health, papers were presented at the First and Second Canadian Medical Care Conferences held jointly with the annual meetings of the Canadian Public Health Association in Edmonton, September 1955 and Saint John, New Brunswick, May 1956. At the Edmonton meeting, a symposium on the Survey was presented with Dr. Gordon E. Wride, Principal Medical Officer, Department of National Health and Welfare as Moderator. The Symposium dealt with the findings of the first seven publications and the Saint John meeting with publications, numbers 8 and 9. These will be published shortly. The remaining reports will be similarly presented in special papers and, in this way, members of the Canadian Public Health Association will have the findings of this most important survey on morbidity in Canada recorded in the Journal by competent authorities.

RESOLUTIONS AT THE FORTY-FOURTH ANNUAL MEETING

In this issue of the Journal, the resolutions presented at the forty-fourth annual meeting are published. It will be noted that the Association reaffirmed its position in regard to the principle of comprehensive nation-wide health insurance and endorsed hospital insurance for all as a desirable prelude to broader coverage.

The Association has long recognized that the prevention and control of accidental deaths are important public health problems. The Canadian Medical Association has recently established a Foundation to further the study of traffic accidents and the Association is to be highly commended for this forward step. It is fitting that the Canadian Public Health Association should urge all public health authorities, federal, provincial and local, to initiate and encourage intensive epidemiological studies of the problem of accidents in all aspects.

The Association has again endorsed the fluoridation of public water supplies as a vital measure for the reduction of dental caries. Every effort is being made through the publication of scientific papers in the Journal to provide health authorities with the essential facts concerning the value of this highly valuable preventive procedure.

To the Editor

As a subscriber to the Canadian Journal of Public Health I enjoy reading your editorials and especially those on water fluoridation. The decision handed down by your Supreme Court of Ontario relating to "prescribe medicinally for the health of its inhabitants" may be more far-reaching than they intended it to be.

Chlorination of drinking water has delivered a fatal blow to enteric diseases spread by that vector. Supplementation of water with fluorine can well be considered a major thrust toward the control of dental caries. Medication is generally considered the application of a means to cure a disease already present in an animal body. Children are not born with dental caries so fluoridation is not added as a medicine but as a supplementation to prevent caries formation. Some of us consider fluoride an essential part of the tooth structure on the basis that the tooth built with proper amount of fluoride in its structure looks better, lasts much longer, and permits the formation of proper occlusal surfaces in the permanent teeth. The mechanism of action is not known.

The matter of supplementation classified by your Supreme Court as medication may well affect products such as the supplementation of flour by niacin and iron now sold in U.S. as "enriched flour", or may prevent the addition of vitamine D concentrate to various milk preparations to prevent rickets in children. Did the Supreme Court of Ontario intend to stop this type of "medication" which I choose to call *supplementation*.

Let us hope the Supreme Court of Ontario reconsiders their decision in the light of the purpose of fluoridation. Fluoride is added simply as a supplement to fluoride deficient waters to provide a means of partial control of dental caries. The process is in the same category as water chlorination in the partial control of typhoid fever. Neither one can be considered a medication. I am enclosing a reprint of an article published about 8 years ago. I hope all obstacles to water fluoridation will soon be cleared away and I am grateful to you for the fine support you are giving water supplementation with fluorides.

M. Starr Nichols, Ph.D.,
Assistant Director,
State Laboratory of Hygiene,
Madison, Wisconsin, U.S.A.

The Canadian Public Health Association
1955-1956

Part III

REPORT OF THE COMMITTEE ON RESOLUTIONS

G. R. Walton, M.D., Chairman

1. BE IT RESOLVED that the Canadian Public Health Association reaffirm its position in the matter of comprehensive nation-wide health insurance and, in so doing, endorse the principle of hospital insurance as an acceptable prelude to broader coverage.
2. WHEREAS there have been remarkable reductions during the past twenty years in illness and mortality from many previously fatal conditions, notably in the field of infection,
   AND WHEREAS both the number and rate of fatal accidents and presumably also non-fatal accidents, particularly among our younger population is actually increasing,
   BE IT RESOLVED that the Canadian Public Health Association urge national, provincial and local public health authorities to initiate or encourage more intensive epidemiological studies of this problem, particularly those relating to home accidents and accidents among children, and to intensify any current educational or publicity campaigns aimed at prevention; and
   BE IT FURTHER RESOLVED that the Dominion Council of Health take this matter under consideration at its next meeting.
3. BE IT RESOLVED that the Canadian Public Health Association reaffirm its stand on the principle of the fluoridation of public water supplies as a measure for the reduction of dental caries.
4. WHEREAS there is a shortage of dentists throughout Canada, be it resolved that the Canadian Public Health Association call the attention of the institutions of higher education to the need for expanded dental education facilities.
5. BE IT RESOLVED that the Canadian Public Health Association express its appreciation for the generous hospitality extended to the Association by the Province of New Brunswick and the City of Saint John during this, its 44th Annual Meeting.
6. BE IT RESOLVED that the Canadian Public Health Association voice its appreciation to the New Brunswick–Prince Edward Island Branch of the Association for the entertainment and hospitality and the excellence of the programme arranged by the New Brunswick–Prince Edward Island Branch of the Association for this, the Association's 44th Annual Meeting.
7. BE IT RESOLVED that the Canadian Public Health Association express its gratitude to the Exhibitors for their generous support of the Association's 44th Annual Meeting and further be it resolved that the Association thank the press for its coverage and publicity.
8. BE IT RESOLVED that the Association commend the Connaught Medical

Research Laboratories of the University of Toronto and the Laboratory of Hygiene of the Department of National Health and Welfare for their splendid contribution to the poliomyelitis vaccine programme in Canada.

REPORT OF THE COMMITTEE ON NOMINATIONS

The Nominating Committee as appointed by the Executive Council of the Canadian Public Health Association consisted of: Miss Muriel Hunter, Dr. A. R. Foley, Dr. A. Groulx, Dr. R. O. Landry, Dr. D. S. Puffer, Miss Mona Wilson, Dr. O. H. Curtis, Dr. A. E. Berry, Dr. J. J. Stanton and Dr. K. C. Charron (Chairman).

The Nominating Committee recommend the nomination of the following as members of the Executive Council for the year 1956–7:

Honorary President

The Honourable Minister of Health for the Province of Ontario

President

Dr. L. A. Pequegnat, Medical Officer of Health, City of Toronto

President-Elect

Dr. Stewart Murray, Senior Medical Officer, Vancouver

Vice-Presidents

Dr. Jules Gilbert—Director of Health Education, Province of Quebec, Montreal
Miss Edna L. Moore—Director Division of Public Health Nursing, Province of Ontario.
Dr. J. S. Robertson—Deputy Minister of Health, Province of Nova Scotia, Halifax

Honorary Secretary

Dr. G. W. O. Moss, Public Health Associate, Connaught Medical Research Laboratories, University of Toronto

Honorary Treasurer

Dr. William Mosley, Director, East York–Leaside Health Unit, Toronto

Editor, Canadian Journal of Public Health

Dr. R. D. Defries, Director-Emeritus and Consultant, Connaught Medical Research Laboratories, University of Toronto

Executive Committee

Dr. G. F. Amyot—Victoria
Dr. J. H. Baillie—Toronto
Dr. A. E. Berry—Toronto
Dr. G. D. W. Cameron—Ottawa
Miss Helen Carpenter—Toronto
Dr. K. C. Charron—Ottawa
Dr. O. H. Curtis—Charlottetown
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Dr. G. M. Little—Edmonton
Miss Christine Livingston—Ottawa
Dr. C. W. MacMillan—Montreal
Dr. G. E. Maddison—Saint John
Miss Ruth McClure—Edmonton
Dr. L. Miller—St. John's
Dr. J. T. Phair—Toronto
Dr. F. B. Roth—Regina
Dr. G. G. Simms—Halifax
Dr. G. R. Walton—Regina
Miss Mary Wilson—Winnipeg

Provincial Representatives: Two provincial representatives from each province to be named by the provincial or regional associations of the C.P.H.A.

Chairman of Each Section of the Association: To be named by the sections concerned.

Past Presidents

Dr. J. A. Baudoin, Montreal (1923–25). Dr. G. D. Porter, Toronto (1926–28). Dr. F. C. Middleton, Regina (1931). Dr. F. W. Jackson, Ottawa (1935). Dr. M. R. Bow, Edmonton (1937). Dr. P. S. Campbell, Halifax (1938). Dr. R. E. Wodehouse, Ottawa (1939). Dr. R. O. Davison, Weyburn (1940). Dr. Jean Gregoire, Quebec (1941). The Hon. J. J. McCann, M.D., Ottawa (1942). Dr. Ad. Groulx, Montreal (1943). Dr. C. W. MacMillan, Montreal (1946). Dr. A. R. Foley, Quebec (1947). Dr. G. F. Amyot, Victoria (1948). Dr. Allan R. Morton, Halifax (1949). Dr. John T. Phair, Toronto (1950). Dr. G. D. W. Cameron, Ottawa (1951). Dr. M. R. Elliott, Winnipeg (1952). Dr. R. D. Defries, Toronto (1953). Mr. Theo. J. Lefreniere, Montreal (1954). Dr. A. Somerville, Edmonton (1955). Dr. J. A. Melanson, Fredericton (1956).

NEWS

Federal News

CANADA was elected to the Executive Board of the World Health Assembly which met in Geneva in late May. The Assembly, the governing body, elects six countries each year to its 18-member executive board. Each country elected serves on the board for a period of three years. The five other countries elected to the executive board this year are the United Kingdom, Italy, India, Mexico and Syria. The Canadian delegation to the 9th assembly of WHO was headed by Dr. G. D. W. Cameron, Deputy Minister of National Health, who will also be Canada's member of the 18th session of the Executive Board. Other members of the Canadian delegation at the Assembly were S. R. Balcom, M.P. for Halifax, D. F. Burns Roth, Deputy Minister of Public Health for Saskatchewan, Dr. Emile Blain, Director General of the Canadian Association of French-Speaking Doctors, Hector Allard, Canada's permanent delegate to the U.N. at Geneva, and Miss Dorothy M. Percy, Chief Nursing Consultant to the Department of National Health and Welfare, Ottawa.

British Columbia

MISS DORIS NOBLE, Nutrition Consultant in Victoria, has resigned after ten years' service with the Health Branch.

Dr. Arthur Jones, from Belfast, Northern Ireland, has been appointed Director of the Peace River Health Unit, Dawson Creek, B.C.

Dr. John Hartley Smith, from Belfast, has been appointed Director of the Skeena Health Unit at Prince Rupert, B.C. Dr. Smith had previously been with Shaughnessy Military Hospital in Vancouver.

Mrs. Carlota Rios, Santiago, Chile, spent two weeks in Victoria studying various aspects of the Health Branch, Mental Health Services, the British Columbia Hospital Insurance Service and general hospital care. Mrs. Rios, a lawyer, is with the Chile National Health Service. She recently completed a course in administrative medicine at Columbia University, and visited Saskatchewan and British Columbia to gain first-hand information about their health services. Her training was sponsored by the World Health Organization and the Pan-American Sanitary Bureau.

British Columbia reported 23 cases of poliomyelitis to July 22, 12 or which were paralytic. Last year, on the same day, there were 51 cases with 34 paralytic.

Saskatchewan

EXECUTIVE DIRECTOR of the Saskatchewan Hospital Services Plan, Mr. G. W. Myers, C.A., has resigned to accept the post of director of finance, purchasing, and stores in the Department of Veterans' Affairs, Ottawa. He has headed the province's hospitalization plan almost since its inception in January, 1947. A native of Saskatoon, Mr. Myers attended the University of Saskatchewan and was admitted to the Institute of Chartered Accountants in 1934. Three years later, he entered the public service. At the outbreak of war he joined the Royal Canadian Artillery. Before his discharge in 1945, he served as an artillery battery commander with rank of major.

"Camp Easter Seal", a summer program for the physically disabled and for the mentally retarded children and adults of Saskatchewan, is now permanently housed in a chalet at Manitou Lake near Watrous. The building and grounds, formerly part of Manitou Provincial Park, were donated to the Saskatchewan Council for Crippled Children and Adults, by the Provincial Government in a ceremony which took place July 22, 1956. The operating costs for the project are obtained from the annual Easter Seal campaign sponsored by the Rotary clubs of the province. Seven separate camps are being held this summer from June 29 to August 31, accommodating 250 disabled persons over the age of seven. The chalet and grounds have been equipped to house about 75 crippled people at one time. Plans for expansion are under way. At present, an outdoor therapeutic pool is being constructed. The campers are under the guidance of special staff including doctors, nurses, physiotherapists, physical education instructors, and other skilled persons. Their program includes swimming, crafts, sports, and other outdoor activities, and is aimed at making disabled persons realize their abilities by living, working, and playing with other persons on a similar competitive level.

Manitoba

W. WATT, M.D., D.P.H., has been appointed Field Director of Local Health Services in the Manitoba Department of Health and Public Welfare as of July 1. Dr. Watt formerly was Medical Director of the St. James-St. Vital-Fort Garry Health Unit.

As part of a program of education begun by the Provincial Bureau of Food and Milk

Control in 1954 to promote the use of pasteurized milk, the Manitoba Department of Health and Public Welfare has had dairy displays at summer fairs in Winnipeg, Brandon, Portage La Prairie, Carman, Rossburn, Roblin, Russell and Dauphin and has distributed, free, pasteurized milk to the public through the courtesy of local dairies. About 150 gallons have been dispensed in 7-ounce paper cups to approximately 3,500 people, some of whom claimed that they had not tasted milk since their childhood.

Health Education Workshop

ANOTHER WORKSHOP for teachers was conducted in Winnipeg this summer under the supervision of the Bureau of Health and Welfare Education of the Provincial Department of Health. The four-week course, which provides three credits towards professional status, is designed to acquaint teachers with the resources available from the Department of Health and Public Welfare and help them plan programs to meet their own school-community needs. Thirty-three were registered. In addition to the health department, other government and voluntary organizations provided lecturers. Dr. Margaret E. Nix, Assistant Professor of Health and Social Medicine, McGill University was one of the visiting lecturers.

Quebec

DR. ANTOINE B. VALOIS, M.P.H., was recently appointed as assistant to the Director of the Department of Health, Montreal, and Dr. Roland Lamquin, D.P.H., was recently promoted as Special Officer in the Director's office.

Dr. W. H. Cruickshank, Medical Director of the Bell Telephone Company of Canada, was recently appointed assistant vice-president, Personnel Division. Dr. Cruickshank is also mayor of the town of Baie d'Urfee, Quebec.

On May 9 Premier Maurice Duplessis officially opened the $4,000,000 Jeffrey Hale's Hospital in Quebec City. The hospital was founded by Jeffrey Hale, a Quebec philanthropist in 1867 to care for the sick and suffering of the Protestant faith in the Quebec area. Today this hospital admits and cares for patients of all faiths and denominations.

Nova Scotia

THREE NEW APPOINTMENTS to the medical staff of the Nova Scotia hospital have been announced. Dr. Ian Chisholm who has completed post-graduate studies in medicine at the Victoria General Hospital has been appointed head of the medical service. Dr. W. J. Fisher has had long experience in psychiatry and neurology in New Brunswick and Dr. L. Brown has completed two years of post-graduate study in psychiatry at Dalhousie University.

Dr. L. J. Frost has been appointed staff dentist in charge of Mobile Dental Unit No. 3. Miss Roberta Devereaux is serving as dental assistant to Dr. Frost during the summer months.

Dr. Ralph Townsend has resigned from the staff of the Nova Scotia hospital to accept a position with the Fundy Mental Health Clinic at Wolfville.

Dr. Juanita Archibald resigned as Director of the Nutrition Division of the Department of Health.

New Brunswick

Nutrition Course

THE FIRST NUTRITION COURSE to be offered in the Atlantic provinces was held at Teacher's College in Fredericton during the first week of July. Eighty were registered including representatives of New Brunswick, Nova Scotia, Prince Edward Island. Those attending included public health nurses, nutritionists, home economics teachers, dietitians and social workers. The course was conducted by the Department of Education of New Brunswick with the assistance of the Nutrition Services of the Department of Health of New Brunswick. The course was directed by Miss Anne Burns and Miss Doris Norman of the Nutrition Division of the Department of National Health and Welfare. Nine addresses were presented during the four days and opportunity was provided for group discussions. Dr. L. B. Pett, Chief of the Nutrition Division, Department of National Health and Welfare, Ottawa, spoke on "What Does Nutrition Mean to You?" and "Food for What?" Features of the program included panel discussion on school lunches, demonstrations of the use of film and film-strip and special projects were carried out by five groups of home economics teachers showing effective teaching methods using debate, drama, group discussion, role-playing, and animal feeding experiments. The theme of the course was "Better Nutrition in the Home". The topics included "nutrition education in schools"; "effective use of teaching aids"; "meal planning"; "nutrition of the pre-school child, school child and teenager"; "school lunches"; "feeding of the sick at home"; and "general principles of health education". Displays of material were presented.

Sanitary Inspector required for health unit. Experience in milk sanitation desirable. Salary range $2,800–$3,900. Car expense account, pension plan, Blue Cross, P.S.I., and group insurance. Five day week, three weeks annual vacation. Apply to Medical Officer of Health, The Lambton Health Unit, Sarnia, Ontario.

Laboratory Technician for new 150 bed general hospital in Batavia, New York, midway between Buffalo and Rochester, New York. Minimum salary $3300 to $3600 depending on qualifications. Applications from Canadians invited. Apply to Genesee Memorial Hospital, 127 North Street, Batavia, New York.

Public Health Nurses (qualified) for City of Oshawa. Four vacancies. Generalized program in urban area Starting salary (without previous experience) $3100. Annual increment $120. Transportation provided. Five day week. Pension and hospitalization plans are available. Apply to Dr. A. F. Mackay, Medical Officer of Health, City Hall, Oshawa, Ontario.

Public Health Nurses required for a generalized program in Etobicoke Township (suburb of Toronto). Starting salary $3,200. Annual increments to $3,680. Further increases above $3,680 by merit rating. Starting salary based on experience. Car allowance $670 per annum. Four weeks vacation after one year. Blue Cross and pension plan. For further details contact Personnel Director, Township of Etobicoke, 4941A Dundas Street West, Toronto 18. Telephone BE-1-4161. 9–10

Public Health Nurse required in a generalized program in rural and semi-urban area adjacent to Metropolitan Toronto. Excellent working conditions, including pension plan, group insurance and transportation arrangements. Write to Dr. R. M. King, York County Health Unit, Newmarket, Ontario.

Public Health Nurses required for a generalized program in surburban and rural areas with Peel County Health Unit. Unit headquarters near Toronto. Salary range $3,000–$3,600. Pension plan, transportation allowance, cumulative sick and holiday leave. Optional Blue Cross and P.S.I. protection. Apply to Mrs. Helen Littleton, Supervisor of Public Health Nursing, Court House, Brampton, Ontario. 9–10

Assistant Medical Officer of Health required by Peel County Health Unit. Minimum salary $6,000 per annum. For details of employment write to Dr. D. G. H. MacDonald, Medical Officer of Health, Court House, Brampton, Ontario.

Sanitary Engineer required by Department of Health, Prince Edward Island, to be Director, Division of Sanitary Engineering. Apply in writing, stating experience, qualifications and salary expected, to Dr. O. H. Curtis, Deputy Minister of Health, Box 404, Charlottetown, P.E.I. 9–12

Medical Officer of Health, British. Qualifications M.D., B.S., D.P.H. (London University) 1930 and 1935, L.M.C.C. (Canada 1951). At present Medical Officer of Health for two large Rural Districts and a small town, England, 18 years experience in British Public Health Service, with three years 1950–53 in Canada as M.O.H. and Medical Director, Health Units, Alberta and British Columbia, wishes to resume work in Canada in suitable Public Health post. Preference Southern Ontario or British Columbia. Initial salary around $7000 p.a., with increments or prospects to higher. For full particulars and photograph, contact Box No. 29, Canadian Journal of Public Health. 9–10